

Railway Age

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Is the Commission's Power Unlimited?

THE issuance by the Interstate Commerce Commission of an order for the Oregon-Washington Railroad and Navigation Company to build 181 miles of new line in Oregon constitutes the most extraordinary effort ever made by a government body to dictate how a railway shall be managed. The litigation in which it should, and doubtless will, result will be followed with keen interest by all the railway managements of the country. If the commission can make its order effective, there is practically no limit to the extent to which it can control the policy of the railways in developing their properties. And yet there does appear to be such a limit. The Supreme Court of the United States only recently held that the commission was without power to compel the railroads to join in constructing a union passenger terminal at Los Angeles.

When a railway proposes to build a new line, the commission has authority to prevent it from doing so by refusing it a certificate of public convenience and necessity. After a line has been built, the commission has authority to regulate its rates and service and to pass upon whether it shall be abandoned. Even such regulation must be reasonable and give due weight to the traffic available and the line's earning capacity.

Who Is More Likely to Be Right?

Obviously if a railway wants to build a new line, there will be no occasion for the commission to order it to do so. It can be only when a railway does not want to build that there can be any pretext for the issuance of such an order. Any railway will always be glad to build a new line if its management believes it will pay. Therefore the issuance by the commission of an order to build must mean one of two things—either that the commission disagrees with the management as to whether the line will pay, or that it seeks to compel the management to build a line that neither the commission nor the management believes will pay.

Which is more likely to be right as to whether a new line will pay—the commission or the railway management? Only one member of the present commission has ever had any executive responsibility for making capital expenditures on a railway. The directors and officers of the Union Pacific System, of which the Oregon-Wash-

ington Railroad and Navigation Company is a part, have had a great deal of such experience. It is only reasonable to assume, therefore, that their judgment as to whether a new line will pay is more likely to be right than that of the commission. Furthermore, it is they and not the commission who must ask investors to provide capital for the project; and it is the owners of the railroad, and not the commission or the government who must take the risk of loss. A railway owes a duty to the people served by a line already built, but when was it ever held by any court or quasi-judicial body that it owes the duty of providing a service that its management believes will not pay to the people of a territory into which it has not built or asked to be allowed to build? They have given it no rights or privileges which make it owe any duty to them.

A New Way of Subsidizing Undeveloped Territories

Still more questionable, of course, are the power and right of the commission to order a railway to build a new line which neither management of the railway nor the commission believes will pay. The loss upon it would have to be paid by the company owning it from earnings made upon its lines in other parts of the country. The Union Pacific system is strong and prosperous, but the Oregon-Washington Railroad & Navigation Company is one of its least prosperous parts. The losses incurred on the new line would have to be paid by the stockholders of the Union Pacific System unless, because of these losses, the commission should allow it to charge higher rates than it would otherwise be allowed to charge, in which case the losses would be paid by the patrons of the Union Pacific System in other territories. Has the government the power to make the owners of the Union-Pacific subsidize people in Oregon by incurring losses on a line which they do not want to build? Or is the authority of the Interstate Commerce Commission broad enough to empower it purposely to so adjust the rates of the Union Pacific in Kansas and Nebraska as to take from the people of those states money with which to pay losses forced upon it by the commission for the benefit of people in Oregon?

Whatever reasons the majority members of the com-

mission who made the decision in this case may give for it, the real reason why they made it evidently is that they believe the commission should assume a paternalistic care of the interests of the people, and in the exercise of that care should compel the railways to do whatever they believe will be in the interest of any part of the people, whether the owners and officers of the railways want to do it or not. If the commission has the power to do this, then the government has delegated to it the management of the railways, while leaving to their stockholders the ownership of the properties together with all the burdens and risks of ownership. The government could not exercise over a railway any greater power than that of compelling it to build and operate a new line, because this would include the power to compel it to raise and invest capital, render satisfactory service, incur operating expenses, and pay taxes for the benefit of people from whom the railway has never asked any rights or privileges; and does not want to serve; and if the commission has this power it must have every less important power of management. If the government can exercise such power in the case of a new line 180 miles long, it can exercise it in the case of a new line 1800 miles long. If it can compel a railway to spend \$9,000,000 for new construction in a territory that it does not want to enter, it can surely compel it to spend ten or a hundred times as much to enlarge and improve its service in a territory which it is already serving and in which therefore, it has, voluntarily assumed obligations and duties.

Have We Private or Government Management?

The Supreme Court said in the Los Angeles union station case that if Congress had intended to empower the commission to order railroads to build a union station it would have expressly said so. It seems even more plain that if Congress had intended to empower the Commission to order railways to engage in extensive new construction it would have expressly said so. And it has not said so. What is more important is, that the Supreme Court apparently has never yet rendered any decision indicating that Congress could constitutionally give any such power to the commission. The power of regulating a line already in existence is one thing. The power to compel a new railway line to be brought into existence is an entirely different thing.

The Interstate Commerce Commission never issued an order which seemed quite so sure not to be upheld by the Supreme Court as does this one. It is perhaps significant that of the seven commissioners who concurred in the decision only two are lawyers, and that one of them is from Oregon and the other from Washington, while of the four commissioners who dissented three are lawyers. While the order seems almost certain not to be upheld by the courts it may well cause concern as an indication of the attitude of a majority of the present members of the commission. The Trans-

portation Act charges the commission with the duty of so adjusting rates as to enable the railways to earn a fair return. This the commission has persistently failed to do. In the O'Fallon case a majority of its members favored a method of valuation which was plainly unconstitutional and confiscatory, and which the Supreme Court refused to uphold. Some of the members of the majority group are now trying to force upon the railways a policy of depreciation accounting which is as plainly confiscatory as was the commission's decision in the O'Fallon case. And now a majority of the commission wholly disregard what have heretofore been considered the property rights of railroad owners by trying to compel a railway to build a line that it does not want to build because it would be unprofitable.

The government ought to buy the railways and assume all the responsibilities and risks of investment, management and operation if, as a majority of the members of the present commission evidently believe, it should regulate them as if it already owned them. On the other hand, as long as the government's policy is one of private ownership and management, the commission should recognize the fact that it is bureaucratic and paternalistic usurpation for it to attempt to make decisions for railway directors and officers which they must make on their own responsibility if the nation really is to have private management and the results of private management.

Dining Car Patronage from Coach Passengers

COACH passengers are notably reluctant to patronize the dining car services of railways. Deterred oftentimes by exaggerated ideas of the prices charged, many such travelers have never dared enter one of these diners for a meal. As a consequence the patronage which dining cars receive comes mainly from Pullman passengers and is insufficient, on the whole, to permit the profitable operation of the dining services. It would seem, therefore, that any plan which could attract coach passengers into the diner would materially decrease the operating ratio of these services.

Most dining cars now serve attractive and reasonably priced combination meals, comparing favorably with similar servings in restaurants. At the recent meeting of the American Association of Passenger Traffic Officers in Winnipeg one member reported that on his road a material increase in dining car patronage had been secured by passing out circulars among coach passengers, showing sample menus and the reasonable prices charged. It was found in this case that many coach passengers had been staying out of dining cars because of a fear that they would be overcharged and that this fear had been eliminated and business increased. On another road where this is also done, a dining car steward re-

plied in the affirmative when asked if it had increased business, adding that the sample menus assure the coach passengers that "they won't be held up if they come in here."

Since in many cases the dining car operating problem is largely one of business volume, some such direct bid for the patronage of coach passengers should offer at least a partial solution, while at the same time the service afforded these passengers in the diners should increase their feeling of good will toward the railroad.

Federal Barge Line Hard to Satisfy

ALTHOUGH the United States government occasionally engages in competition with private businesses conducted by its citizens, and the officers in charge of such governmental "experiments" often take on a "holier-than-thou" attitude toward private business, they do not always accept the restraints placed upon them by other governmental bodies any more readily than do the officers of railways and other regulated corporations.

At the last session of Congress the Inland Waterways Corporation persuaded Congress to direct the Interstate Commerce Commission to require the railways to join with the federal barge line in through routes and joint rates, without a hearing, and to fix reasonable minimum differentials between such joint rates and the all-rail rates. In an order dated April 8, 1929, in Ex Parte No. 96, the commission complied with the Denison act but failed to make all the joint rates quite as low as the barge line, not being under the necessity of earning its own living, had suggested. In nearly all cases it had proposed to construct the joint barge-rail and rail-barge-rail rates by deducting from the all-rail rates between the same points differentials equivalent to 20 per cent of the all-rail rates contemporaneously effective on like traffic between the ports between which it is proposed that the traffic shall move by barge.

Twenty per cent is the usual differential by which the barge line rates are less than the competing rail rates, although its reports indicate that many of its rates are on a lower basis, and is supposed to represent roughly the differential in cost and value of barge and rail service. Incidentally it is about the only tangible figure available to support the claims of the waterway enthusiasts that their service is less expensive than rail service.

The same question had been before the commission in other cases in which it had failed to be convinced of the propriety of the full 20 per cent differential asked and in this instance it also declined to approve it. Instead the commission prescribed a formula using 10 per cent in some cases and 20 per cent in others, depending

upon the relative length of the rail and water routes involved, on the theory that "as circuitry increases economy decreases" and that "the differential ought to decrease as circuitry increases."

Although the Interstate Commerce Commission is supposed to be an impartial body and to have the interests of the shippers as much at heart as the Inland Waterways Corporation, the latter is not yet satisfied with the commission's ruling and has petitioned it for a modification of the order so as to allow a uniform 20 per cent differential. It says in its petition that the formula prescribed by the commission results in adjustments which are "discriminatory," "incongruous," and "impracticable."

In this connection it must be recalled that the 10 per cent differential allowed by the commission in circuitous cases was the result of its own decision, without either help from or interference by the railways, because the commission decided that the Denison act required it to prescribe through routes and joint rates without a hearing, immediately after it had issued a certificate of public convenience and necessity to the barge line. Moreover, the waterways corporation does not attempt to justify its proposed 20 per cent reduction on any cost basis. It admits that its probable cost of service at the time the 20 per cent differential was originally adopted "could be but roughly conjectured," and that "to compile necessary data to prove whether or not the differentials on the 20 per cent basis accurately reflect the proper difference in the cost and value of all-rail vs. differential service is practically impossible."

Increase of Railway Wages

AS a result of the steady advances that have been occurring for six years, the average hourly wage of all railway employees in 1929 will be only about one per cent less than in 1920 when wages were the highest in history. The average hourly wage of 1920 was 67.6 cents and in the first nine months of 1929 it was 67 cents. The average for the year may slightly exceed the latter figure. Railway wages were reduced in both 1921 and 1922, and reached their lowest post-war level in 1923, when they averaged 61 cents. In 1924 they averaged 62.3 cents; in 1925 and 1926, 63.1 cents; in 1927, 64.4 cents, and in 1928, 65.6 cents.

In view of the fact that the average wage now being paid is almost the same as in 1920, the changes that have since occurred in the total railroad pay roll are highly significant. The total wages paid in 1920 by the Class I roads, exclusive of switching and terminal companies, were almost \$3,682,000,000. The total paid in 1923, after wage reductions had been made, exceeded \$3,004,000,000. The total pay roll for 1929 will be about \$2,852,000,000, or about \$830,000,000 less than in 1920 and about \$152,000,000 less than in 1923, when the average wage was the lowest since the peak of 1920.

The explanation of the large decline in the total pay roll is to be found in reductions in the number of employees and in the hours worked by them. In 1920 the railways had 2,022,832 employees. In 1923 they had 1,857,674, while in 1929 they have about 1,663,000. The reduction since 1920 has been almost 360,000, and since 1923 almost 195,000.

The operating expenses of the railways in the first ten months of 1929 were \$70,000,000 more than in the corresponding part of 1928, and of this increase about 70 per cent, or approximately \$50,000,000, was due to an increase in their pay roll. Although 5 per cent more freight business was handled, the increase in the pay roll was due only in very small part to an increase in the number of employees, which was less than one-half of one per cent. It was due almost entirely to an increase in the average hourly wage paid of almost 3 per cent. The increase in the average hourly wage of all employees since 1923 has been about 10 per cent.

While the railways since 1923 have made a reduction of about 5 per cent in their total pay roll, in spite of an increase of 10 per cent in the average wage paid by them, they have made reductions in their operating expenses, exclusive of the pay roll, averaging 15 per cent. With wages and taxes increasing, and both passenger and freight rates declining, they would have been bankrupted instead of having increased their net operating income, if they had not effected huge economies by reducing the amount of labor employed by them and in numerous other ways.

Co-Operative Advertising

ON another page of this issue appears a short article by C. Dandridge, advertising manager of the London & North Eastern, which tells briefly of the British railways' joint advertising campaign. Typical advertisements are reproduced to show in a general way the scope of the program. The question of joint railway advertising is of considerable importance and is now attracting well-merited attention in this country. It has two aspects—both freight and passenger, of which the latter is at the moment the more pressing due to the keen competition of other forms of transportation for this business.

There was a day when the only competition for passenger traffic was among the various railroads themselves. Now the chief competitor is another form of transportation. Moreover, intensive merchandising methods employed to sell a wide range of commodities is probably diverting funds which might otherwise be spent for travel. It seems obvious, therefore, that if a particular railroad wishes to secure additional passenger traffic, its first sales task is to convince the prospective passenger that he ought to travel, rather than spend his available funds for some other merchandised service or commodity. Second, the prospec-

tive passenger must be won to rail transportation, rather than some other form. Only when the sales task has been carried as far as this can a question of competition among railroads arise.

If this is the sales problem, should not advertising be made to conform to it step by step, i.e., first be planned to win the public to travel and, second, to railway travel—before any advertising competitive with other railroads is resorted to? Logically the task of merchandising railway service in general is one in which all railways should join. The experience of the British companies and their methods should prove interesting and helpful to the American railroad men who are working on the same problem.

Supplementing the Freight Car

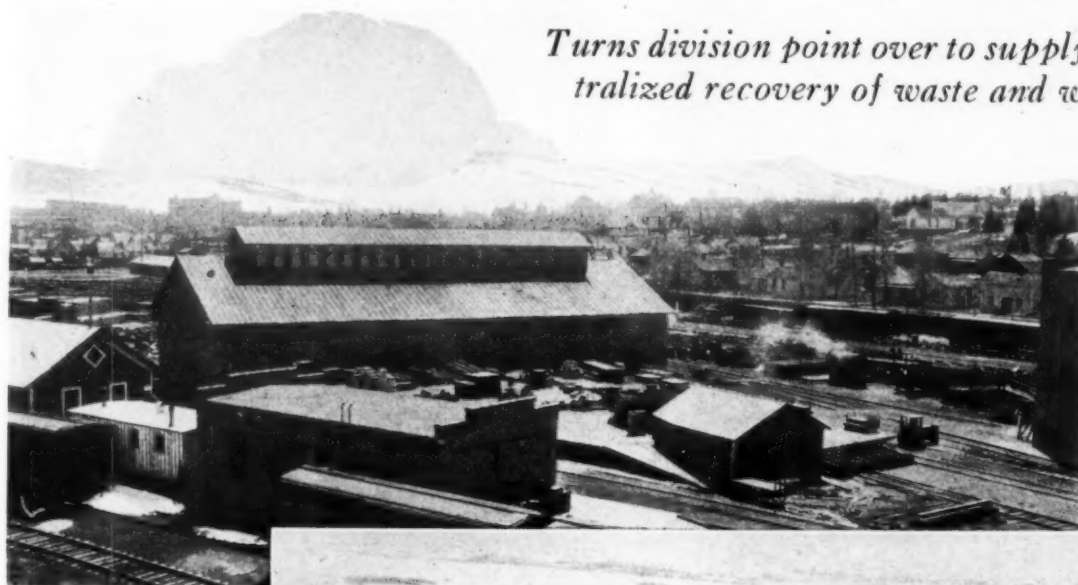
BECAUSE of the fact that the changes have been made quietly and with a minimum of publicity, there may not be a general realization of the extent to which the railways are supplementing their freight cars with other kinds of commodity carriers. Railroad freight transportation is no longer a strictly rail-haul proposition. Instead, there is evidence of a growing tendency among railway managements to utilize in the provision of freight service the transportation agency, of whatever nature, best suited to the particular conditions involved.

Many roads, of which the New York Central and the Pennsylvania are the outstanding examples, are using motor trucks to replace various kinds of train service in terminals and along their lines. Other railways are going beyond their railway lines with motor trucks, the latter acting to a large extent as feeders to the former. Store-door delivery is again receiving attention, service of this nature having been established fairly recently by the Southern Pacific, through the medium of the Pacific Electric Motor Transport Company, and by the Texas & Pacific, through the medium of the Texas & Pacific Motor Transport Company. Likewise, the St. Louis Southwestern, through its subsidiary, the Southwestern Transportation Company, is operating a number of different kinds of motor truck services, so arranged as to effect a high degree of co-ordination between railway and highway service, to the end that shippers may be better served and operating costs reduced. Merchandise containers are being more widely adopted, these containers making possible the provision of a new type of freight service.

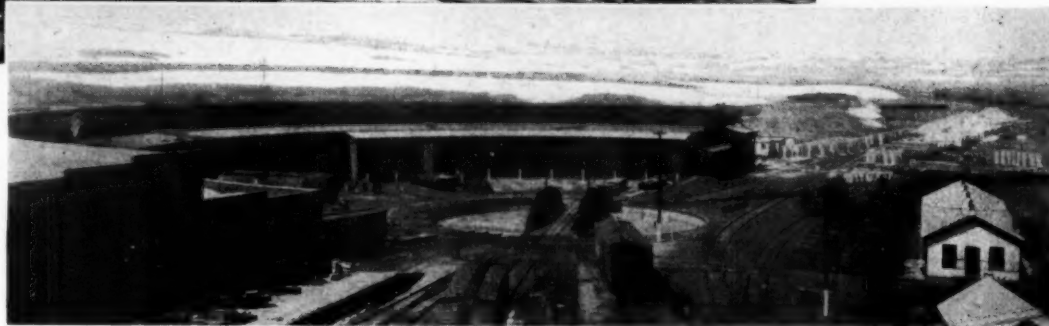
As business methods change, railroad operating methods, upon which business depends so strongly, are likewise changing. The changes now taking place in the transportation industry indicate that we are in a transition period which will revise to a marked degree previous conceptions of what constitutes efficient transportation service.

Union Pacific Opens System Reclamation Plant

Turns division point over to supply forces for centralized recovery of waste and worn materials



Reclamation Facilities at Evanston

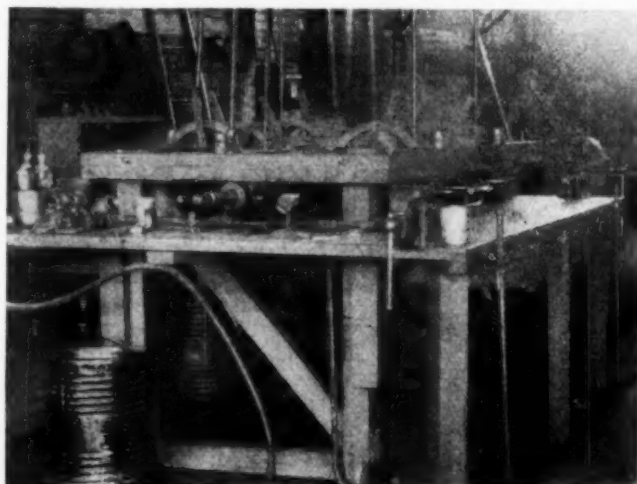


THE Union Pacific has opened shops at Evanston, Wyo., 80 miles east of Ogden, Utah, for repairing and reclaiming a variety of materials for the system. This plant is operated by the supply department and utilizes recently abandoned division locomotive terminal facilities. It is chiefly devoted to maintenance of way materials, but the work also extends to materials for the mechanical, operating and traffic departments, and includes all repairs to roadway work equipment. Features of this plant are the heat-treating facilities for tools and the concrete products work.

Previously each of the four roads comprising the Union Pacific System did its own repairing and reclaiming of materials, the work being done principally by the mechanical departments in their nearest shops, or in various maintenance of way shops. Some of this work continues to be handled as before, particularly in view of the remote location of Evanston from some of the points where the materials originate and are returned for use. The desire of the various machine shops to confine their work more closely to locomotive and car maintenance, however, encouraged the separation of the repairing of miscellaneous materials, while the desire for more uniform practice and the growth in reclamation or other work which the road could do economically with mass production favored a considerable centralization.

Evanston is not near a large shop or store point, but

had buildings and other facilities which could be utilized with little additional investment. The facilities comprise a 28-stall roundhouse with brick walls, a modern machine shop, a storehouse, a newly-constructed power house, an office building, and a variety of supplementary buildings besides coaling and watering facilities. The terminal also has a lunch counter and a



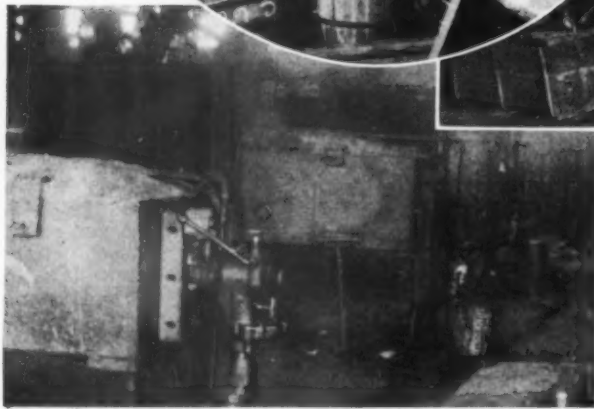
One of the Multiple Grinding Machines in the Valve Repair Section



The repairs to roadway equipment such as clam shells, pile drivers, steam shovels, etc., all repairs to motor cars and track tools, are performed at this point; also the manufacture of various roadway signs, push cars, and trailers and all sash and door work, while a signal shop has been established for repairing relays and signal



A Corner of the Machine Shop, and Glimpses in the Heat Treating Section



fine company club house, while close by lies a fair sized town. The place was abandoned as a division point with the development of long engine runs but the shop buildings and machinery, including the steam boiler and air compressing facilities, were left standing, and the supply department had only to pipe the plant with acetylene, build a few platforms and install a few additional machines to convert the place into a well-equipped reclamation and repair shop.

mechanisms for the three western divisions of the railroad. Scrap for the railroad is not concentrated at Evanston, but the various division storekeepers sort out the items of material at their division scrap docks, which can be reclaimed, or the scrap material which can be converted into other uses, and this is forwarded to the plant for use there. In all cases, they are governed by a standard bulletin which states specifically the material which will be reclaimed, reconditioned or manufactured at Evanston, and this bulletin is kept up to date and added to from time to time.

Has Well-Equipped Cement Plant

The cement plant occupies a seven-stall section in the roundhouse. Here such items as concrete fence posts, cattle troughs, hog troughs, reinforced concrete pipe, signal battery boxes and piers and bases for lumber skids are made. The plant is equipped with a $\frac{3}{4}$ -yd. electric-driven concrete mixer. Sand and gravel are spouted to the mixer from outside hoppers which are filled by clam shell, while cement is spouted into the building from an elevated track and carried to the mixer by an electric hoist. This arrangement calls for a minimum amount of labor. Cement posts are made on a revolving table which is installed adjacent to mixer. Steel forms are placed on the table and filled directly from the mixer by revolving the table. The forms are then transferred to push cars spotted opposite the table and as the push cars are loaded they are moved to a storage track. After setting 24 hours, the posts are removed from the forms and piled under a water spray where they are cured for 21 days.

Next to the cement plant is a welding department where stoves of all kinds are reclaimed and reconditioned, and various car and locomotive parts, frogs and switch points are built up by both acetylene and electric processes. There is a planer in the section for machining any welded surfaces requiring it. Various items are also manufactured from scrap material in this section. They include farm gates and sign poles which are made from scrap flues, also metal signs and similar products which are made from new or scrap sheet iron. Frog



The Revolving Table for Pouring Concrete Fence Posts

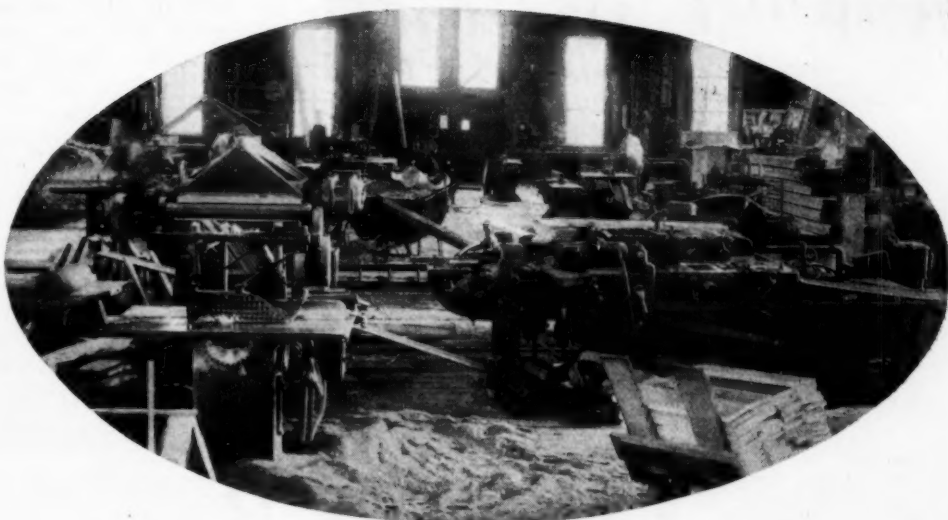
and switch points are also built up in this department.

Next to the welding shop is a department which has been organized for reconditioning scoop and track shovels. Where shovel blades are worn beyond the limit, the steel is used in manufacturing various items such as scuffle hoes. This department has a special machine for dismantling and assembling shovels.

The next section is the blacksmith shop. Here all track tools for the system are repaired, and various items such as all-metal ballast dressers, cellar bolts, packing irons, wheel clamps, ash hoes, buggy bars, etc., are made. This shop is equipped with modern equipment for heat treating, normalizing and annealing. The furnaces are all oil-fired and pyrometer-controlled, and the work is moved in baskets from furnace to furnace by an overhead crane. The tools are all handled in groups in order to give each make of tools the heat treatment found to be best suited to the kind of steel used. The water and oil quenching vats are equipped with thermometers so that temperature can be regulated; another pyrometer with ten point finger control is provided to take the reading on any of eight oil-fired furnaces to check the furnaces at any time, and one piece from each batch is tested by the Brinell method to keep the hardness within the prescribed range.

There are four other departments in the roundhouse, a department where heavy locomotive, journal and track jacks and bonding drills are repaired; a department equipped with a nine-spindle globe valve grinder and 2 nine-spindle angle cock grinders and air pressure testing facilities for repairing valves; also a shop where all air, signal, steam and fire-fighting hose are mounted, and, in addition, a shop in which tin ware is reclaimed and manufactured.

The machine shop is equipped with various lathes, drill presses, shapers, planers, and also with a 15-ton overhead electric crane with which to service the roadway machines handled at Evanston and to do the miscellaneous work



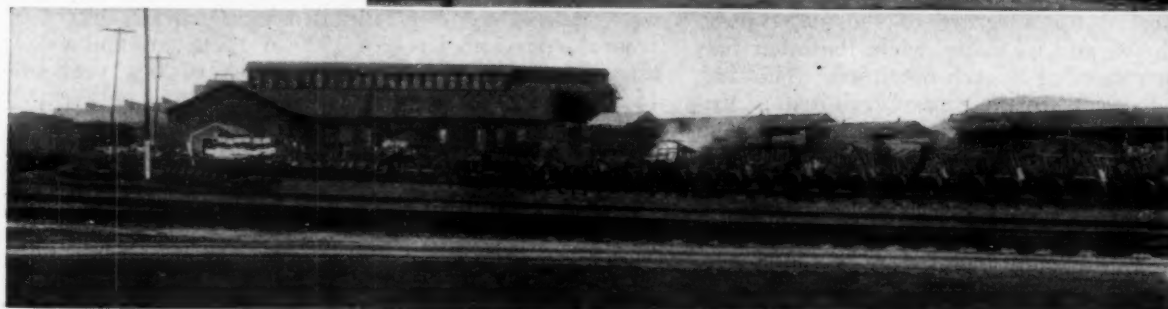
There Are Over Twenty Machines in the Wood Mill

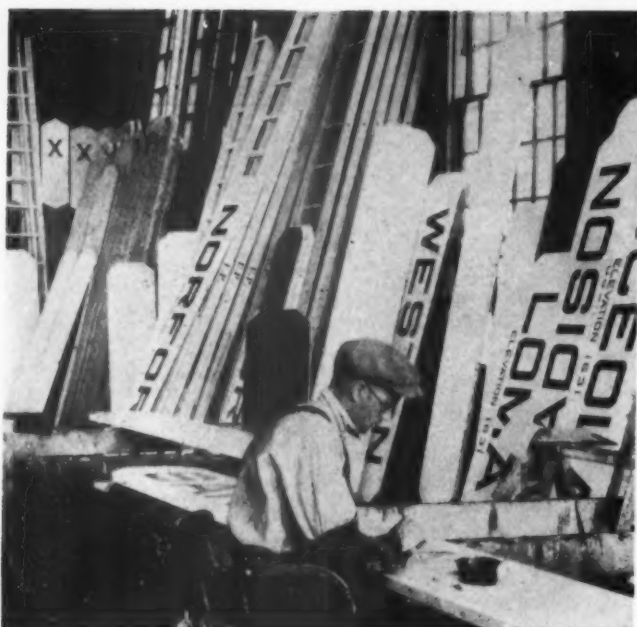
for the various departments of the plant. All motor cars are repaired in this shop, being completely stripped and rebuilt from the frames up at the average rate of one car per working day. There is a tool-room in this shop equipped with lathe, milling machine and Universal grinding machine for taking care of various tools and dies used in the plant, and in one end of the shop is machinery for rethreading bolts, retapping nuts and repairing goggles.

Equipment Repairs Made

Various kinds of freight car brake beams are also repaired and rebuilt at Evanston, while in a wood mill equipped with three band saws, a Universal wood worker, two cut-off saws, two 12-in. jointers, a tenoning machine, morticer, 26-in. planer, 30-in. rip saw, a 4-sided moulder, an 8-in. jointer and three three-drum sanders, motor car trailers and push cars are repaired. All signs used on the Union Pacific System are made in

The Machine Shop and Wood Mill at Evanston





A Corner of the Paint Shop

this mill; also items such as wooden flagstaffs, ladders, sash and doors; and all baggage wagons and warehouse trucks are repaired there.

The equipment used about the plant for the handling of material and delivery of various items from department to department consists of one gasoline tractor for moving various trailers; another gasoline tractor on which a small electric crane is mounted for handling heavy castings; one locomotive crane, equipped with bucket and a magnet; and one light delivery truck for making rapid deliveries.

At the present time there are 270 men in the organization, virtually all of whom are trained especially in their line and kept on specific work as far as it is practicable to do so.

Keep Costs

Careful cost records are kept. Each item repaired or remanufactured is controlled by a monthly store order and at the end of the month the cost of each operation is determined by adding to the cost of scrap material, the cost of any new material used, the labor expended in the work and the plant overhead. This cost is then compared against the cost of new material, or, if the work was formerly done in any shop or other department, it is compared against that department's or shop's former cost, and the saving or loss figured.

Production records are kept for each article on cards in an indexed filing cabinet where the cost is compiled month by month for a period of two years, after which a new card is started and attached to the old card. In this way each month's performance can be compared with previous performance. On the back of the card, one-half is reserved for a record of the material required for each job and its value, while the other half shows the labor expended in each operation. This furnishes a complete record of the cost of each item of material and furnishes a means of checking the time spent on each job.

Yearly Savings Total \$500,000

On the basis of cost comparisons as explained above, this plant is saving the Union Pacific approximately one-

half million dollars per year. The figures for the month of August, 1929, are indicative of the average month's performance. During that month the difference between plant cost, and new, or, former shop costs, of repaired and reclaimed material, was \$36,666. The difference between plant cost and new, or, former shop costs, of items manufactured from second-hand material, was \$12,808, and the difference between plant cost and the new, or, former shop costs, of items manufactured from new material, was \$3,866, which gives a total saving of \$53,342.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended December 7 amounted to 936,825 cars, a decrease of 47,948 cars as compared with the corresponding week of last year but an increase of 58,149 cars as compared with 1927. Grain and grain products, coal and coke showed increases as compared with last year, but all districts reported decreases. All districts, however, with the exception of the Southern, reported increases as compared with 1927. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, December 7, 1929

Districts	1929	1928	1927
Eastern	207,295	216,906	194,261
Allegheny	183,638	200,423	173,113
Pocahontas	58,702	57,856	46,390
Southern	138,137	154,220	143,686
Northwestern	112,475	115,244	100,682
Central Western	155,751	153,633	142,593
Southwestern	80,827	86,491	76,951
Total Western Districts	349,053	355,368	320,226
Total All Roads	936,825	984,773	877,676
Commodities			
Grain and Grain Products	47,983	56,699	44,234
Live Stock	31,260	33,687	31,779
Coal	218,132	199,091	172,427
Coke	12,158	10,706	9,666
Forest Products	52,901	63,129	56,913
Ore	8,808	11,193	8,118
Merchandise L.C.L.	247,389	256,444	246,657
Miscellaneous	318,194	353,824	307,882
December 7	936,825	984,773	877,676
November 30	837,107	900,556	918,487
November 23	950,280	1,029,237	840,642
November 16	983,323	1,056,120	968,052
November 9	1,049,475	1,054,353	975,134

Cumulative totals, 49 weeks.....50,385,621 49,057,625 49,256,692

The freight car surplus in the week ended November 30 averaged 340,740 cars, an increase of 51,071 cars as compared with the preceding week. The total included 181,198 box cars, 114,826 coal cars, 24,240 stock cars and 9,805 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended December 14 totaled 59,521 cars, a decrease from the previous week of 1929 of 1,892 cars and a decrease from the corresponding week of last year of 15,863 cars.

Total for Canada	Total Cars Loaded	Total Cars Rec'd from Connections
Dec. 7, 1929	59,521	35,141
Nov. 30, 1929	61,413	33,560
Nov. 23, 1929	64,578	35,792
Dec. 8, 1928	75,384	40,866
Cumulative Totals for Canada		
Dec. 7, 1929	3,370,535	1,987,470
Dec. 8, 1928	3,518,312	1,936,626
Dec. 10, 1927	3,215,880	1,821,259

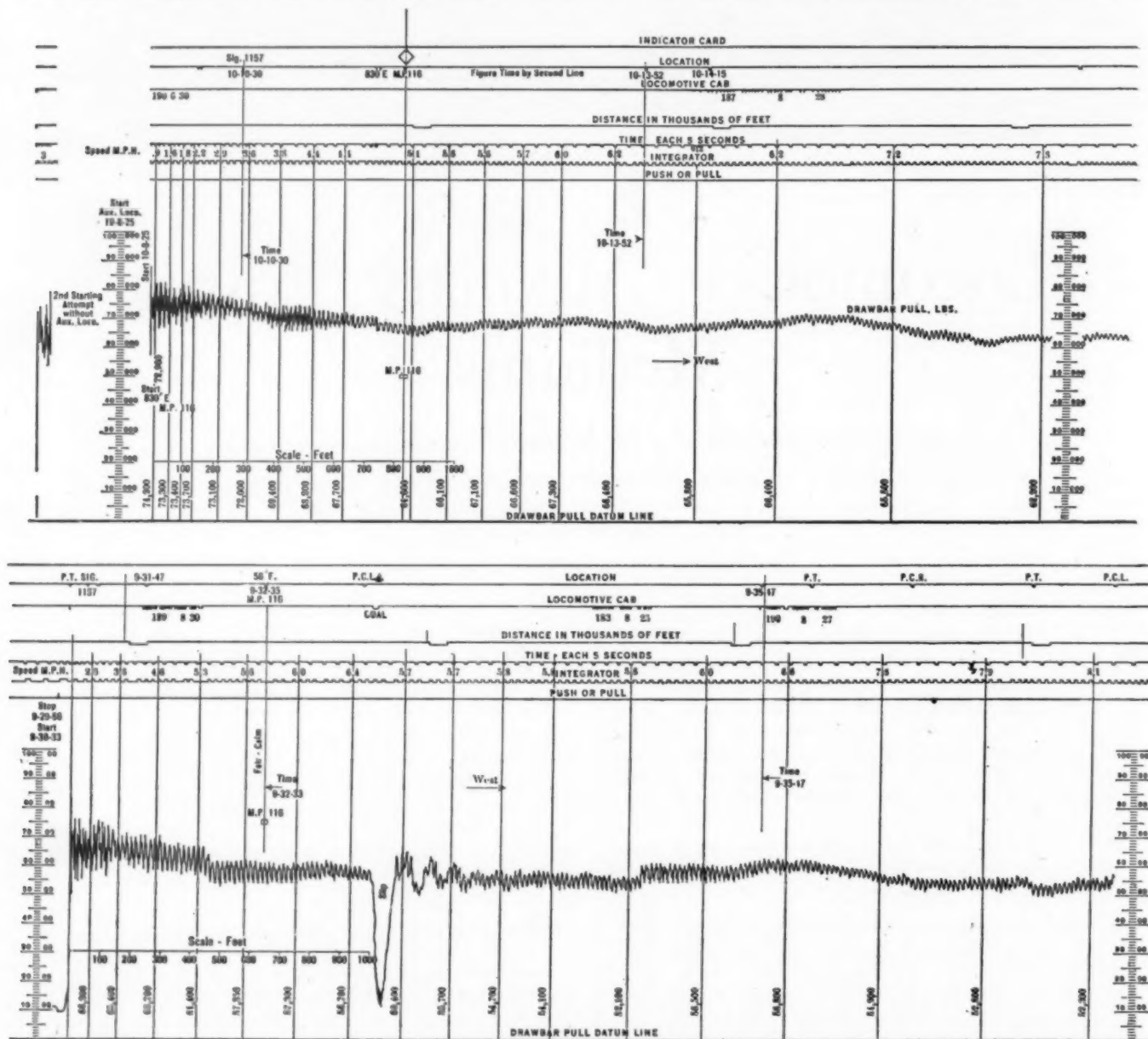
power use. The boiler of a locomotive in its design must be considered in relation to the steam requirements at speed. Generally considered, experience has shown that maximum steam requirements and maximum horsepower for superheated-steam locomotives occur around a piston speed of 1,000 ft. per min. It is this surplus boiler capacity which can be drawn upon, as reflected in road and test-plant results,* and utilized in the operation of an auxiliary power medium.

Considering the various features of train operation, it is clear that the use of an auxiliary power unit which

While railroad operation involves so many kinds of profiles and traffic conditions that no fixed rules can be laid down to indicate the various power arrangements that would be most efficient with respect to utilization of auxiliary power and regular helper service, there are few operations to which the auxiliary locomotive cannot be adapted on a very profitable basis.

Permits Increasing Train Tonnage

Where ruling grades are relatively short (momentum or otherwise), the use of an auxiliary power unit per-



Reproduction of Dynamometer Charts Showing Comparative Performance in a Starting Test at Mile Post 116—The Top Chart Shows the Drawbar Pull with the Auxiliary Locomotive Cut In—The Bottom Chart Shows the Engine Operating Alone

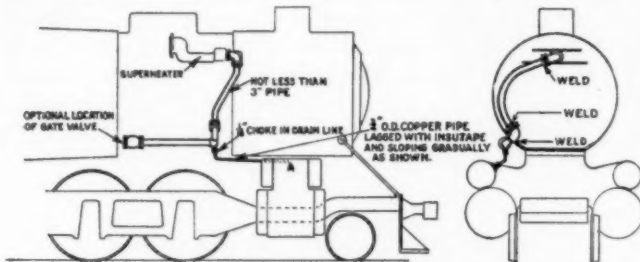
can be operated independently so as to be available when required for assisting the locomotive in starting the train, and permitting considerable increase in train tonnage beyond that which could otherwise be handled, is closely related to economical train operation.

* An article describing the results of tests of the Bethlehem auxiliary locomotive on the Pennsylvania locomotive test plant, Altoona, Pa., was published in the *Railway Age*, September 29, 1928, page 603.

mits increasing the train tonnage an amount over the entire division consistent with that for a locomotive of a tractive force equal to that of the combined auxiliary and main locomotive.

Where the ruling grade is compensated by means of assistant or helper-engine service, the next heaviest grade of the district then becomes the ruling grade, and where conditions warrant, tonnage rating can be ar-

ranged with reference to the capacity of the main locomotive and auxiliary locomotive on the secondary grade. A condition such as the foregoing would undoubtedly require auxiliary power use in negotiating the primary ruling grade, and might require auxiliary power use on



Auxiliary Locomotive Steam-Pipe Connections to the Superheater When a Front-End Throttle is Used

helper locomotives if sufficient differential existed in gradient.

Operating conditions with heavy pusher ruling grades, which do not present long continuous uniform gradients, afford ample opportunity for increasing train tonnage through the use of an auxiliary power medium

which is applied only to the helper locomotives.

Low-grade operating divisions permitting high-speed operation to which high-capacity power with large driving wheels is adapted can, as previously outlined, be negotiated by increased tonnage trains through the use of the auxiliary power unit to start and accelerate the train.

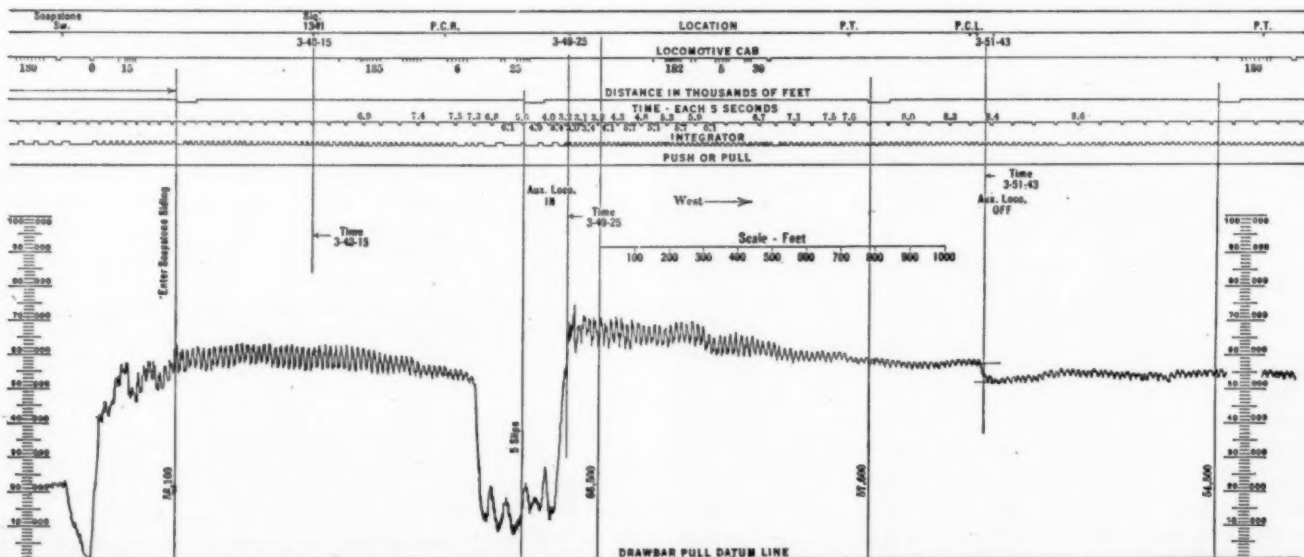
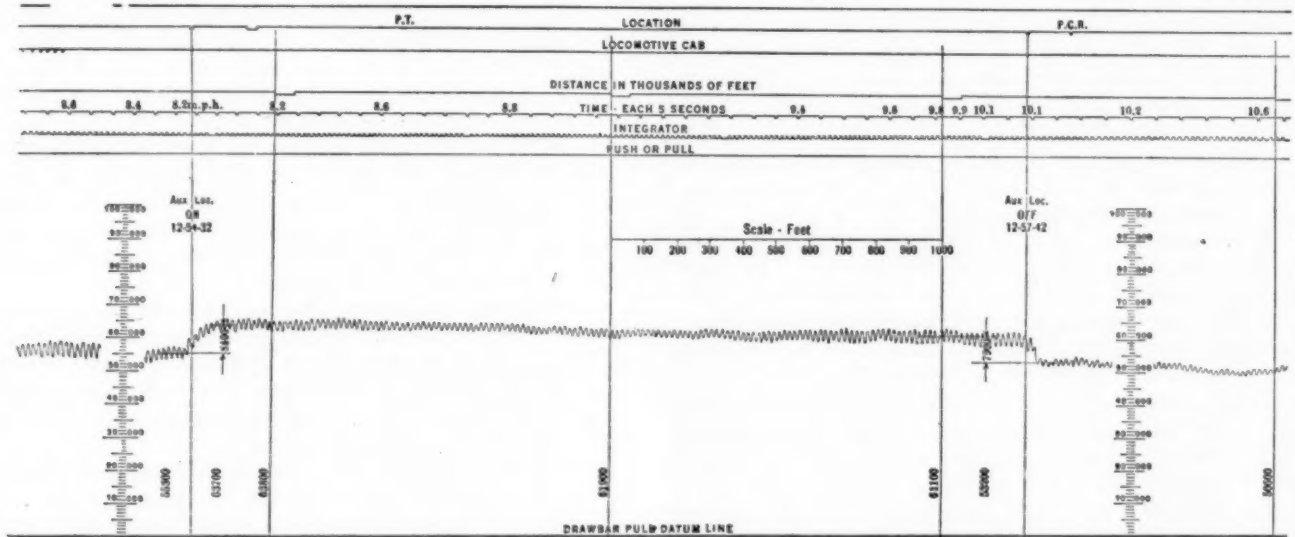
Many locomotives have sufficient boiler capacity to support two auxiliary locomotives where only short

Table I—Log of Road Test No. 3

Time	Boiler Pressure	Steam chest Pressure	Auxiliary locomotive Pressure	Water level in glass	Superheat	Reverse lever
10-08-30	193	180	175	3/4	540	30
10-09-36	185	167	150	1/2	550	30
10-14-30	187	170	150	1/2	570	28
10-18-35	185	172	150	3/4	590	25
10-27-05	185	168	150	3/4	590	25
10-29-18	187	165	150	3/4	580	20
10-34-20	185	170	150	3/4	580	20
10-35	184	163	150	1/2	580	25
10-38-30	188	165	150	1/2	580	23
10-41	183	168	150	1/2	575	23

periods of operation of the auxiliary units are required. This is especially an important feature in regard to hump engines, so as to permit handling trains with a single locomotive without the necessity of cutting them.

Dynamometer-car tests were run on the Boston and



Top: Drawbar Pull with Auxiliary Locomotive in Operation Entering Soapstone Siding. Bottom: Engine Operating Alone Over the Same Track

Maine during the spring of 1927, which give a good picture of what can be accomplished under service conditions.

The tests were run between Mechanicsville, N. Y., and East Deerfield, Mass., over the Berkshire division of the Boston and Maine. In both directions, there is

Table II—Acceleration from Start at Signal 1798

Test number Engine and auxiliary locomotive	Distance from start, ft.	Time from start, sec.	Speed, m.p.h.
2	1000	147	6.5
	2000	244	7.9
4	1000	167	7.0
	2000	255	8.6
Engine only			
6	1000	190	6.3
	2000	285	8.7
8	1000	169	6.9
	2000	259	7.3

an up grade operation to the Hoosac tunnel piercing the Hoosac Mountains, and through which trains are handled by electric locomotives.

A comparative picture of road operation on the section between Mechanicsville and Hoosick Falls as revealed by these dynamometer tests is shown in one of the charts. This shows the profile of that section of track.

In demonstrating the value of the auxiliary locomotive as well as to answer satisfactorily whether tonnage could be handled, all test trains were stopped on the ruling grade at the worst operating condition and handled from there. Further, all tonnage trains were started with the use of the auxiliary locomotive only to supplement the locomotive after three stalling starts were made with the locomotive only.

East-bound traffic is of major importance on tonnage trains, being the prevailing movement. The operation in this direction showed an increase in the gross ton-miles per train-hour, the average being 60,188 for auxiliary locomotive operation as against 55,718 for the locomotive only, an increase of 8 per cent.

West bound there was a slight loss in gross ton-miles per train-hour, an average of 40,809 being secured under extra tonnage operation compared with 41,690 under regular operation, a loss of 2.2 per cent.

No difficulty was experienced at any time in maintaining the steam pressure on the locomotive during the time the auxiliary locomotive was in operation. The log of boiler, steam-chest, and auxiliary steam-chest pressures, as well as water-level, super-heat, and reverse-lever position, are given in Table I for test No. 3 over the section from the start at signal 1157, Mile Post 116 to 120 with the auxiliary-locomotive operating over the entire section. The reason for the drop in pressure at the last reading was to avoid lifting the safety valve after the engine was partly shut off passing Mile Post 120.

The four dynamometer charts shown illustrate the value of an auxiliary locomotive. Entering Soapstone siding, the locomotive ordinarily could handle the train, but in rounding the reverse curve just beyond the entrance switch, a bad rail condition was encountered. Owing to water dropping from a ledge of rocks onto the right-hand rail, the locomotive slipped badly upon reaching this spot. The speed was reduced from 7½ m.p.h. to 3 m.p.h. in 45 sec., and the locomotive would have stalled except for the fact that the auxiliary locomotive was cut in, and within a distance of slightly over 1,200 ft. accelerated the train from 3 m.p.h. to 8.4 m.p.h.

A typical use of the auxiliary locomotive to accelerate a train on a grade, and at the same time compensate for curvature on the grade, was while a train was being handled on a 0.47 per cent grade. The engine had just started on a short tangent beyond the last curve, so that the train was being handled around a number of curves. The use of an auxiliary locomotive in handling increased tonnage over a heavy grade is shown in a typical start with a regulation tonnage train from signal 1157, east of Mile Post 116 using the locomotive only, and the starting of an auxiliary locomotive extra-tonnage train from the same point. An additional draw-bar pull of 10,000 lb. was needed to start this train over that which the locomotive alone developed in a stalling start. A steadier pull was secured by the use of the auxiliary locomotive and there was a decreased tendency of the main locomotive to slip.

Use of the auxiliary locomotive is shown in Table II, which gives the acceleration while handling regulation tonnage from signal 1798 near Mile Post 180. These records also serve to show the relative accelerating ability of the locomotive equipped with the auxiliary locomotive where the use of the auxiliary is continued beyond the point absolutely required to handle the extra tonnage train.

The use of an auxiliary locomotive from a bad water-plug stop is presented by the operating conditions at Johnsonville, N. Y., where the train is on a 0.55 per cent grade, and the engine dips over the crest of the hill and starts down a 0.39 per cent grade.

It is evident in the foregoing that the locomotive boiler fundamentally determines the utility of an auxiliary power medium. While a given locomotive boiler has a definite evaporative capacity, it must be conceded that this capacity cannot under present locomotive design be availed of at all speeds.

Stephenson in the early stages of locomotive development conceived the idea of employing the exhaust steam in a blast for the purpose of drafting the locomotive. This principle is still employed, and with the employment of the most efficient appliances represents a nearly ideal method for ordinary operation.

Draft is a function of combustion rate, and also of steam consumption and therefore exhaust, and the variation in the combination of variables is such that as an increased firing rate becomes necessary, the increased steam consumption and therefore the exhaust increases the draft so as to support the higher firing rate.

It must therefore follow that under certain conditions, the increased boiler capacity required for auxiliary power use must result from forcing the boiler beyond the normal capacity for that condition of working. Many attempts have been made to develop methods of induced and forced draft which will have the effect of making the boiler independent of engine working, and with the successful development of any such method, a greatly extended field for auxiliary power utility will be opened up.

THREE TRAINS A WEEK will be operated between Berlin (Germany) and Naples (Italy) after January 1, 1930, according to Department of Commerce reports of improved schedules worked out by the railroads of those two countries. The trains will carry through cars of both first and second class and the running time will be 31 hours, a considerable reduction over the present schedule.



Ventilating House at the East Portal, Showing the Entrance Signal at the Left

Steam Operation No Obstacle to Use of Moffat Tunnel

Ingenious ventilating system developed after thorough investigation proves entirely effective in 6.25-mile bore

By R. F. Sopris*

SINCE February 26, 1928, the Denver & Salt Lake has been operating its trains through the Moffat tunnel, the longest railway tunnel in the world in which steam engines are employed for power. Although this tunnel is 6.25 miles long, has a rough unlined periphery and an interior grade summit, steam operation has resulted in no difficulty or inconvenience to train crews or passengers during the 20 months that the tunnel has been used. This must be ascribed to the effectiveness of a ventilating system, embodying a number of distinctly unique features, that was developed after a careful investigation covering a considerable period previous to the completion of the tunnel. This investigation embraced not only the feasibility of ventilation for steam operation in a tunnel of such great length, but also the relative economy of steam and electric operation, and proved, to the satisfaction of the management of the Moffat line, that steam operation would be entirely practicable and also more economical, taking into account the volume of traffic, physical conditions and the prevailing costs of electric power and locomotive coal.

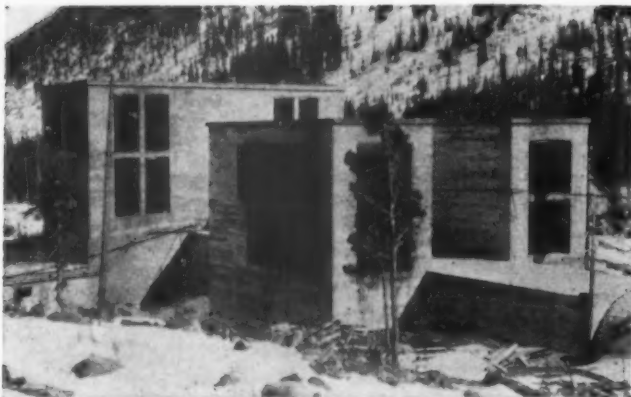
The Moffat tunnel pierces the continental divide on

the line of the Denver & Salt Lake about fifty miles west of Denver at an altitude of 9,200 ft. The single track rises on a 0.3 per cent grade from the east portal and on grades of 0.7, 0.8 and 0.9 per cent from the west portal, the ascending grades from the two portals meeting in a summit vertical curve at a point 2.7 miles from the east portal. The tunnel section is 16 ft. by 24 ft. except for a length of approximately 2,000 ft. near the summit, where the necessity for a concrete lining to take care of heavy ground resulted in some encroachment on the established clearance. In general, the cross-sectional area averages about 350 sq. ft.

Since the tunnel was opened the daily train movement through it has averaged approximately three freight trains, three returning helpers and two passenger trains. The Moffat line holds a 50-year lease on the tunnel and is, in fact, the only railway to which the tunnel is accessible over its own rails. For this reason, the practical operation of the line through the tunnel became a matter of live interest to the management as soon as the construction of the tunnel was started, and steps were taken at once to make a careful study of the entire problem.

The railroad extends from Denver, Colo., in a northwesterly direction to Craig, a distance of 235 miles, and

* Engineering assistant to the president of the Denver & Salt Lake from November, 1926, to July, 1929, in charge of work on the ventilating plant.



A Rear View of the Ventilating House, Showing the Discharge Towers and Louver Doors

makes no connections with other lines outside of Denver. There are no yard or shop facilities at either portal. No water power is available near the tunnel which could serve as the source of sufficient current supply for electric operation, and power purchased from the nearest available source would cost about \$1.75 per kw.-hour. On the other hand, the railroad serves a productive coal territory and locomotive coal on the tender costs less than \$2 per ton.

The revenue traffic movement through the Moffat tunnel has averaged about 350,000 tons per annum since the tunnel was opened. Practically all of this tonnage is eastbound and a large percentage of it is coal, which moves in considerably larger volume during the fall and winter. Naturally, any method of operation would have to be based upon the maximum movement which, under present traffic, means the handling of probably five freight trains eastbound, five returning helpers and the daily passenger train each way. At present, these freight trains will rate as high as 3,800 tons each and must be handled over the 1.76 per cent grade in the line approaching the tunnel from the west.

Undesirable Power Factor

With such a limited number of trains, any plan for electrification that contemplated the handling of the trains through the tunnel intact called for an excessive cost for plant and a high maximum power demand, considering the total daily power consumption. On the other hand, the alternative of reducing the power demand by breaking up trains at the west portal, for the purpose of hauling them through in smaller units to be reassembled at the east portal, was obviously too cumbersome to be given serious consideration. Pulling the train engine through the tunnel by electric locomotives would eliminate the necessity for providing duplicate steam power at each portal, but after a series of tests had shown that the percentage of poisonous gases in the engine stack increased enormously during periods of drifting or light working, it was thought highly dangerous to consider such a method of operation in a tunnel of this length, with its high apex where the gases might collect, unless a positive means of removing these gases were provided.

Naturally, if the system of ventilation required for such a plan of operation could be enlarged to care for the complete steam operation of the tunnel without exceeding the initial or excess operating costs of electrification, the simplest operating system would be achieved. Actually, the original estimates for artificial ventilation were considerably under those for even the cheapest plan for electrification, and the power requirements for ventilation were less than one-fourth of those for electric

locomotives which would provide comparable service. These considerations, along with the difficulty of maintaining a separate organization for the operation of the tunnel and the delays incident to a change of power, convinced the railroad that a thorough investigation of the possibilities of artificial ventilation should be made, with a view to adopting this method of operation, if it were found feasible.

Special Problems Imposed

Between 1923 and 1926, the heads of the engineering, mechanical and operating departments of the railroad, visited all of the longer steam operated tunnels on this continent and collected extensive data from foreign sources in regard to tunnel ventilation. As a result of these investigations, it was decided that steam operation of the Moffat tunnel was entirely possible. However, it was recognized that a number of unusual conditions were presented at this tunnel. It is of great length; it has a high apex; the cross-section is small and its rough rock surface impedes the flow of air; it penetrates the continental divide, thereby making the portals subject to wide barometric variations. For these reasons it was concluded that a special study would have to be made to ascertain what departures from usual ventilation practice would have to be made to care for these special conditions.

The air requirements necessary for proper ventilation of the tunnel were based upon the permissible carbon monoxide concentration used in the Holland vehicular tunnel in New York City, where extensive research had shown that the presence of 0.04 per cent of carbon monoxide in the air could be permitted for reasonable periods with safety. A series of tests on the exhaust gases of locomotives in actual road service gave data from which the air volume necessary to dilute the carbon monoxide in the exhaust to the permissible point could be computed. Basing the calculations upon an assumed train of negligible velocity, burning the maximum amount of coal, as obtained by tests of the largest type of power, with a high average carbon monoxide content in the exhausts, the amount of air necessary to obtain the required dilution of the poisonous gases was determined. This air volume was checked upon the basis of allowable intervals for a complete change of air in the tunnel and was found satisfactory for operating time limits.

The next step was the determination of the pressure necessary to force this volume of air through the tunnel. It was decided that any attempt to force air through the tunnel from one portal by means of directional velocity



The Main Discharge Damper

would be impracticable if not impossible, because of the extreme high ratio of length to cross-sectional area of the tunnel, the absence of a lining and the great differences in barometric pressures at the two portals that it would sometimes be necessary to overcome.

A Unique System

For this reason, the plan adopted is one that provides for the positive control of the direction of the current of air through the tunnel by closing the east portal, where the fan installation was made. By this means it is possible to induce a flow of air toward the west portal by discharging air into the tunnel, or a flow of air toward the east by exhausting air from the tunnel.

Mr. McElroy of the United States Bureau of Mines conducted a series of tests shortly after the holing through of the pioneer bore, from which a friction coefficient for the railroad tunnel was calculated. These tests were made by passing air through the pioneer bore around the unfinished portion of the railroad tunnel under barometric pressure and were conducted without any interruption to the work in progress. With the friction coefficient thus determined and with two years' records of the barometric readings at each portal, it was possible to arrive at a figure for the pressure required, excepting that necessary to overcome the piston effect of a train moving through the tunnel, which was computed after Saccardo's formula.

It was decided early in the investigation that the diluted exhaust gases would have to be blown back over the train, since any attempt to maintain an air velocity in the tunnel sufficient to push the gases ahead of a train moving at a reasonable speed would require excessive power for fan operation. This plan would also result in a cloud of smoke ahead of the train that would obscure the engineman's view without offering compensating advantages. As constructed, the ventilating plant can handle the air in either direction, train speeds simply being limited by the maximum draft velocity possible, if it is desired to blow the exhaust ahead. The system followed, that of blowing the diluted gases past the train, puts no limit on the train speed and gives the engineman a per-

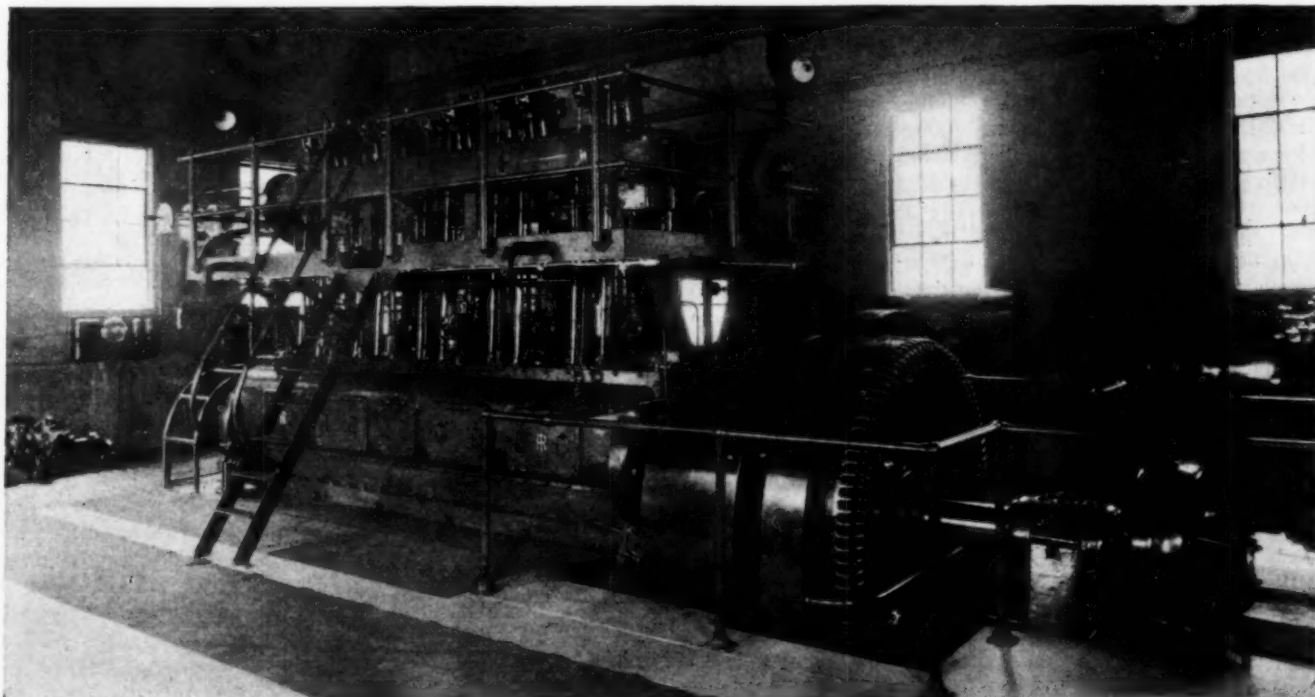
fectly clear tunnel ahead. The conditions in the coaches have also proved satisfactory.

The Fan Installation

As installed, the ventilating plant consists of two independent centrifugal fans with their accessories, one on each side of the east portal, thereby providing a duplicate installation for greater safety and flexibility of operation. The fans are direct connected to 2,300-volt motors operating at 360 r.p.m. One unit is a 750-hp. fan of the single-inlet type; the other is a 500-hp. fan of the double-inlet type. Each fan is provided with intake and discharge ducts fitted with structural steel dampers, by means of which either fan can either exhaust air from the tunnel or discharge fresh air into the tunnel.

The fans with their control equipment are housed in a reinforced concrete structure 120 ft. wide and 40 ft. deep, that is 55 ft. high at the central tower which houses the tunnel door provided to close the portal. This door is a structural-steel frame supporting a canvas curtain. There is no steel member across the bottom of the door and means are provided for quickly replacing the canvas in case it is run through—an event which has occurred without damage to the locomotive or the door, other than the canvas which was readily replaced in a few hours.

The fan dampers, by means of which the air is directed into the tunnel or exhausted from it, are actuated by individual electric motors operating through worm gears and pinions on racks attached to the dampers. These motors are provided with push-button controls. The tunnel door, which weighs $4\frac{1}{2}$ tons and is completely counterweighted, is opened or closed in eight seconds by an electric motor. Its position is controlled by a set of track circuits through which the door is raised when trains come within 1,800 ft. on either side of the door. Signals in front of the portal and in the tunnel give a red aspect when the door is down, clearing to green as soon as the door is completely raised. Should a fan be running, it is stopped automatically by the raising of the door. When the train has passed to a point 100 ft. beyond the portal the door automatically lowers and the fan is put into motion.



Current is Supplied by a 572-kva. Generator Driven by a Five-Cylinder Oil Engine



The Tunnel Portal With the Canvas Door in the Lowered or Closed Position

For the operator's convenience, manual controls are provided for all of the normally automatic functions, but once the fan dampers are set for a train movement, the control of the ventilating plant is practically automatic, requiring no manual attention other than the checking of the air-pressure gage and the movement of the fan speed-control switch. Indicator lights to show the position of the dampers and the presence of a train within the limits of the track circuits are provided on the operator's board, along with indicating and recording air-pressure gages and electric meters for regulating the load on the fans. Concrete intake and discharge towers were provided for each fan unit, through which fresh air is discharged into the tunnel or smoke is removed from the tunnel and discharged into the open air, depending upon the setting of the fan dampers. These towers are fitted with steel doors that are interconnected and operated from the damper so as to provide protection against snow drifting in on the operating parts of the plant.

Install Generating Plant

During the first eight months of operation, the ventilating plant was operated with electric current purchased from a public service company, but after its success was thoroughly demonstrated an oil engine generating plant to provide the current was installed in a wing constructed on the south side of the portal house. The plant consists of a five-cylinder, 17 $\frac{3}{4}$ -in. by 22-in. Ingersoll-Rand oil engine with a direct-connected generator and exciter. This engine is rated at 585 hp. at an altitude of 9,200 ft. and the generator has a capacity of 572 kv.a. with a correction for the altitude, and generates current at 60 cycles when operated at the normal speed of 257 r.p.m. In the construction of the room and in the installation of accessories, provision has been made for the possible addition of a second unit.

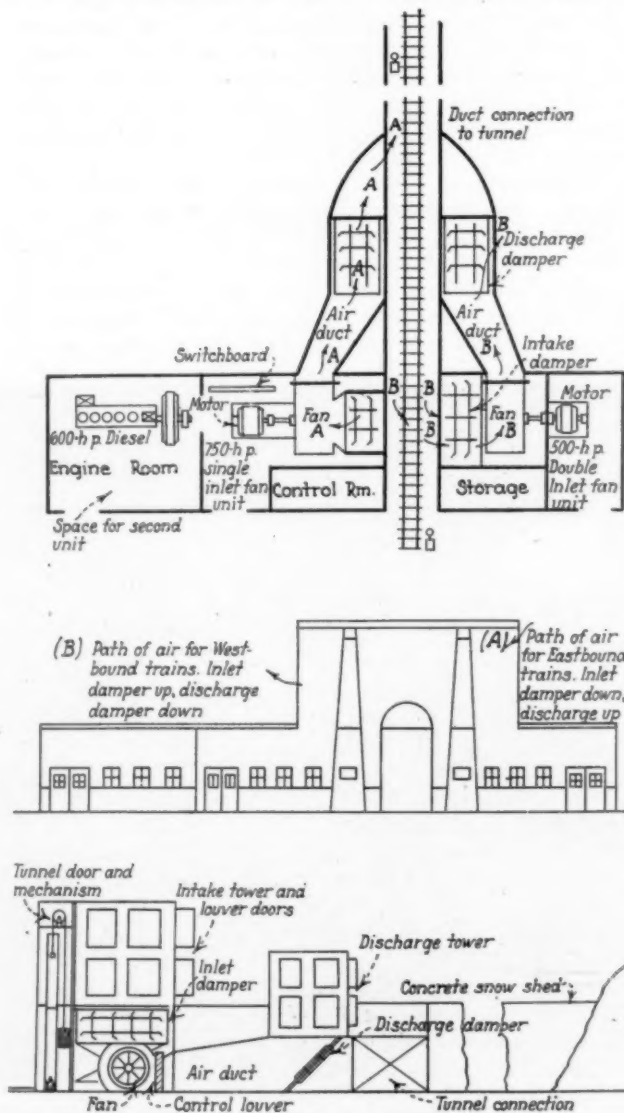
For heating the engine room and the south motor room, a Davis Paracoil exhaust boiler has been provided. A Ray oil burner has been installed to fire the boiler during periods when the engine is not being used frequently enough to maintain the proper temperature.

This occurs only when the engine is shut down for a day or more. An air compressor, which can be connected to a motor or a gas engine drive, is used to furnish starting air for the engine.

With the exception of two items, the engine is of standard manufacture. To facilitate placing the engine in a starting position, Homestead cocks of 500-lb. capacity were interconnected on the compression reliefs and are operated by a lever placed near the starting jack. This arrangement has been entirely successful and, under the conditions, is a well merited addition.

In order to get a compact, powerful and economical unit, it was decided that an attempt should be made to avoid as much power loss due to altitude as possible by supercharging the engine. To this end, the engine was equipped with a Connersville blower of 5.83 cu. ft. capacity, driven at twice the engine speed by a Tex-Rope drive from the engine shaft. The blower takes air through steel piping 15 in. in diameter, either from the engine room or outside and discharges it through a 10-in. pipe into the engine intake manifold at pressures ranging from 4.6 to 4.9 lb. or enough to raise the air pressure to a close approximation of that obtained at sea level. It is estimated that the blower consumes about 50 hp. in returning the 165-hp. loss due to the altitude, or a net gain of 110 hp.

From the time that the generating plant was placed in service on December 3, 1928, to April 14, 1929, 245,600



Sketch Plan and Elevations of the Ventilating Plant at the East Portal of the Tunnel

kw. hr. were generated at the switchboard. This required the consumption of 22,816 gal. of fuel oil and 60 gal. of lubricating oil, but entailed no repairs or maintenance expenses other than that for 50 lb. of waste. The fuel oil of 35-36 gravity used costs six cents per gallon at the plant and lubrication oil costs 50 cents a gallon, the total cost for these items amounting to 54 cents per kw. hr. Although no attempt has been made to arrive at an accurate figure for the total cost of the power, including attendance, interest, depreciation, etc., it may be said that the plant is effecting a considerable saving as compared with the cost of purchased power.

Three men have no difficulty in operating the entire plant and maintaining its extensive equipment in proper shape. One operator is on duty at a time, but each remains at the plant for two hours after being relieved, attending to such maintenance as is necessary.

In practice, the dispatcher calls the plant operator a few minutes before a train is expected at either portal and notifies him that ventilation is desired for a definite train movement. The operator, by pushing a button, arranges the dampers to direct the air in the desired manner, an operation which takes 30 sec. if he stays to see it completed, although this is not necessary as the dampers stop automatically when they have completed their movement. He then goes into the engineroom and, by touching a button, starts the cooling water circulation. A couple of steps takes him to the starting valve of the engine which he opens to start the engine and, after the engine is running, he usually waits to see that it is running smoothly and that the oil and water are circulating properly. He then returns to the telephone and tells the dispatcher that he is ready for the train, starting the fan by pressing another button on the control board, if the train is ready to enter, and telling the dispatcher that the fan is in action. Upon this assurance, the dispatcher gives the train the right to enter the tunnel. All of this preparation has been timed on many occasions and found to take from 2 to 2½ min. from the time the operator gets up from the telephone until he returns to notify the dispatcher that everything is ready.

A Year's Operating Record

Operation over a period of two years has afforded ample proof of the practical and economical success of the ventilation of the tunnel and its use with steam power. The total train delays due to waiting for the tunnel to be cleared out have been less than 10 hours a year.

There has never been any trouble with smoke or gas, although as many as three Mallet engines have moved through the tunnel in one train. There have been no reports of any ill effects to live stock handled through the tunnel. A passenger train was once held in the tunnel for almost three hours by an engine failure and not the slightest discomfort was noted. There have been several instances of freights stopping in the tunnel for considerable periods because of train or engine trouble, without causing any concern as to air conditions.

The plant has been operated without any troubles other than such minor matters as a burned fan bearing due to a broken oil ring, a little annoyance resulting from the moist tunnel air getting into the electrical wiring, and ice on the dozen or so days in the winter when there are storms and the temperature is at its lowest. None of these has tied the plant up.

The total cost of the plant, including both the ventilating system, power equipment and the substantial building in which they are housed, is \$250,000. The plant can be run for about \$1,000 a month, including the operators' wages and all the expenses for fuel oil and other

materials. For all practical purposes it is giving the same satisfaction that any electrical scheme could give and it is saving the delays at each portal which would be necessary for electrified operation, in addition to operating costs estimated at not less than \$100,000 annually.

I. C. C. Appointments

WASHINGTON, D. C.

PRESIDENT Hoover on December 17 sent to the Senate the nominations of Joseph B. Eastman for reappointment as a member of the Interstate Commerce Commission and of Judge Robert Milton Jones, of Knoxville, Tenn., for appointment to succeed Commissioner R. V. Taylor, whose term expires at the end of the year. Judge Jones is serving the fifth year of an eight-year term as chancellor of the Tennessee court of chancery. Commissioner Eastman was appointed for a third term, having been originally appointed by President Wilson in 1919 and reappointed by President Harding in 1922. Both appointments are for terms of seven years. Commissioner Taylor, who will retire at the end of the year, was appointed by President Coolidge in 1925, succeeding C. C. McChord.

Following a custom originated by President Hoover shortly after his inauguration the notices of the appointments given out at the White House were accompanied by the names of those who had endorsed the nominees and the list of Commissioner Eastman's endorsers included nearly 500 names, among them a score of railroad officers and attorneys, 36 senators and representatives, 7 former members of the commission, 20 labor organizations, a dozen state railroad commissions, in addition to individual members, and a large number of lawyers practicing before the commission and representatives of shippers and commercial organizations. The railroad men were mostly commerce counsel but they also included several traffic officers and E. G. Buckland, chairman of the New York, New Haven & Hartford, and Thomas M. Perkins, acting president of the Boston & Maine.

Judge Jones' list of endorsers included members of Congress from Tennessee and other states, five former senators, six judges, and a long list of attorneys and public officials. He was born in Roane county, Tenn., September 23, 1870. He attended the public schools of Roane county and Roane College, and was graduated in 1893 from Grant University, Athens, Tenn. He studied law at the law college of the University of Tennessee and was admitted to the bar in 1896. He practiced law at Kingston, Tenn., 1896-1903, and was a member of the firm of Carr & Jones, Harriman, Tenn., 1903-1911. In 1911 he formed a partnership with the late T. Asbury Wright and practiced as a member of the firm of Wright & Jones at Knoxville, Tenn., 1911-1920. From 1920 to 1922 he was a member of the firm of Jones & Andrews. In 1922 he became a member of the law faculty of the University of Tennessee, and is still a lecturer there. In 1924 he was appointed circuit judge and since 1926 he has been a chancellor of the court of chancery.

Judge Jones is a Republican, although Commissioner Taylor, whom he succeeds, is a Democrat. Since the appointment of Commissioner Farrell there have been five Democrats on the commission. With Judge Jones as a member there will be six Republicans and four Democrats, while Commissioner Eastman is classified as an independent.

Co-Operative Advertising in Britain

By C. Dandridge

Advertising Manager, London & North Eastern

IN THE LIGHT of the proposal that American railways join in an advertising program to stimulate passenger travel, made by D. M. Bowman, passenger traffic manager of the Cleveland, Cincinnati, Chicago & St. Louis, to the American Association of Passenger Traffic Officers in Winnipeg in September and reported in the *Railway Age* of October 5, information in regard to such a campaign by the railways of Great Britain may be of interest.

At the Railway Clearing House in London, the publicity and advertising representatives of the railways of Great Britain meet periodically as an "Advertising and Public Relations Committee," of which body the writer is chairman this year. That committee for some years has recognized the necessity for joint action in the presentation to the public of the facilities offered by the railways for the conveyance not only of passengers but of freight traffic.

Accompanying specimens (greatly reduced in size) of joint advertisements of special low fares for passenger travel show how the railway companies have been, and are, co-operating in educating the public to the advantage of rail travel. The advertisement "The Week's Cheapest Trips—By Rail" is a newspaper display which appeared in two London evening papers, and presents to the public in clear form the "bargains"

BRITISH RAILWAYS AND TRADE REVIVAL

TRADERS'
SEASON
TICKETS

BULK
TRAVEL
COUPONS

A Four-Page Leaflet Telling of Travel
Concessions Made to Freight
Patrons

WHAT THE RAILWAYS OFFER FOR WHITSUN!



Excursions everywhere ~ the quickest way!

RETURN TICKETS AT SINGLE FARE AND A THIRD
Travel by rail the surest way. Book your tickets and send your luggage in advance.

PERIOD EXCURSIONS
on MONDAYS (for 5 or 12 days) and on FRIDAYS or SATURDAYS (for 8 or 15 days).
(Also on Tuesdays and Wednesdays for 8 or 15 days to certain places).

WEEK-ENDS BY ANY TRAIN
Outward, every Friday, Saturday or Sunday.
Return, Saturday, Sunday, Monday or Tuesday.
Children's Fare: 4/- 1st class, 2/6 2nd class.

DAY and HALF-DAY TRIPS TO SEASIDE or INLAND
at less than a penny per mile!

CHILDREN UP TO 14 HALF FARE

Ask for a Whitstable or Early Summer Holiday Programme at any Station, Office or Agency of the
GREAT WESTERN, LONDON & NORTH EASTERN, LONDON MIDLAND & SCOTTISH and SOUTHERN RLYS.

The Week's Cheapest Trips-By Rail

G.W.R. HALF-DAY TRIPS FROM PADDINGTON STATION

SUNDAY, AUGUST 12

Depart	Return
10.0 a.m. to WATFORD	11.0 a.m.
10.15 a.m. to WATFORD	11.15 a.m.
10.30 a.m. to WATFORD	11.30 a.m.
10.45 a.m. to WATFORD	11.45 a.m.
11.0 a.m. to WATFORD	12.0 p.m.
11.15 a.m. to WATFORD	12.15 p.m.
11.30 a.m. to WATFORD	12.30 p.m.
11.45 a.m. to WATFORD	12.45 p.m.
12.0 p.m. to WATFORD	1.0 p.m.
12.15 p.m. to WATFORD	1.15 p.m.
12.30 p.m. to WATFORD	1.30 p.m.
12.45 p.m. to WATFORD	1.45 p.m.
1.0 p.m. to WATFORD	2.0 p.m.
1.15 p.m. to WATFORD	2.15 p.m.
1.30 p.m. to WATFORD	2.30 p.m.
1.45 p.m. to WATFORD	2.45 p.m.
2.0 p.m. to WATFORD	3.0 p.m.
2.15 p.m. to WATFORD	3.15 p.m.
2.30 p.m. to WATFORD	3.30 p.m.
2.45 p.m. to WATFORD	3.45 p.m.
3.0 p.m. to WATFORD	4.0 p.m.
3.15 p.m. to WATFORD	4.15 p.m.
3.30 p.m. to WATFORD	4.30 p.m.
3.45 p.m. to WATFORD	4.45 p.m.
4.0 p.m. to WATFORD	5.0 p.m.
4.15 p.m. to WATFORD	5.15 p.m.
4.30 p.m. to WATFORD	5.30 p.m.
4.45 p.m. to WATFORD	5.45 p.m.
5.0 p.m. to WATFORD	6.0 p.m.
5.15 p.m. to WATFORD	6.15 p.m.
5.30 p.m. to WATFORD	6.30 p.m.
5.45 p.m. to WATFORD	6.45 p.m.
6.0 p.m. to WATFORD	7.0 p.m.
6.15 p.m. to WATFORD	7.15 p.m.
6.30 p.m. to WATFORD	7.30 p.m.
6.45 p.m. to WATFORD	7.45 p.m.
7.0 p.m. to WATFORD	8.0 p.m.
7.15 p.m. to WATFORD	8.15 p.m.
7.30 p.m. to WATFORD	8.30 p.m.
7.45 p.m. to WATFORD	8.45 p.m.
8.0 p.m. to WATFORD	9.0 p.m.
8.15 p.m. to WATFORD	9.15 p.m.
8.30 p.m. to WATFORD	9.30 p.m.
8.45 p.m. to WATFORD	9.45 p.m.
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9.30 p.m. to WATFORD	10.30 p.m.
9.45 p.m. to WATFORD	10.45 p.m.
10.0 p.m. to WATFORD	11.0 p.m.
10.15 p.m. to WATFORD	11.15 p.m.
10.30 p.m. to WATFORD	11.30 p.m.
10.45 p.m. to WATFORD	11.45 p.m.
11.0 p.m. to WATFORD	12.0 p.m.
11.15 p.m. to WATFORD	12.15 p.m.
11.30 p.m. to WATFORD	12.30 p.m.
11.45 p.m. to WATFORD	12.45 p.m.
12.0 p.m. to WATFORD	1.0 p.m.
12.15 p.m. to WATFORD	1.15 p.m.
12.30 p.m. to WATFORD	1.30 p.m.
12.45 p.m. to WATFORD	1.45 p.m.
1.0 p.m. to WATFORD	2.0 p.m.
1.15 p.m. to WATFORD	2.15 p.m.
1.30 p.m. to WATFORD	2.30 p.m.
1.45 p.m. to WATFORD	2.45 p.m.
2.0 p.m. to WATFORD	3.0 p.m.
2.15 p.m. to WATFORD	3.15 p.m.
2.30 p.m. to WATFORD	3.30 p.m.
2.45 p.m. to WATFORD	3.45 p.m.
3.0 p.m. to WATFORD	4.0 p.m.
3.15 p.m. to WATFORD	4.15 p.m.
3.30 p.m. to WATFORD	4.30 p.m.
3.45 p.m. to WATFORD	4.45 p.m.
4.0 p.m. to WATFORD	5.0 p.m.
4.15 p.m. to WATFORD	5.15 p.m.
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5.0 p.m. to WATFORD	6.0 p.m.
5.15 p.m. to WATFORD	6.15 p.m.
5.30 p.m. to WATFORD	6.30 p.m.
5.45 p.m. to WATFORD	6.45 p.m.
6.0 p.m. to WATFORD	7.0 p.m.
6.15 p.m. to WATFORD	7.15 p.m.
6.30 p.m. to WATFORD	7.30 p.m.
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9.45 p.m. to WATFORD	10.45 p.m.
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10.15 p.m. to WATFORD	11.15 p.m.
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10.45 p.m. to WATFORD	11.45 p.m.
11.0 p.m. to WATFORD	12.0 p.m.
11.15 p.m. to WATFORD	12.15 p.m.
11.30 p.m. to WATFORD	12.30 p.m.
11.45 p.m. to WATFORD	12.45 p.m.
12.0 p.m. to WATFORD	1.0 p.m.
12.15 p.m. to WATFORD	1.15 p.m.
12.30 p.m. to WATFORD	1.30 p.m.
12.45 p.m. to WATFORD	1.45 p.m.
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6.45 p.m. to WATFORD	7.45 p.m.
7.0 p.m. to WATFORD	8.0 p.m.
7.15 p.m. to WATFORD	8.15 p.m.
7.30 p.m. to WATFORD	8.30 p.m.
7.45 p.m. to WATFORD	8.45 p.m.
8.0 p.m. to WATFORD	9.0 p.m.
8.15 p.m. to WATFORD	9.15 p.m.
8.30 p.m. to WATFORD	9.30 p.m.
8.45 p.m. to WATFORD	9.45 p.m.
9.0 p.m. to WATFORD	10.0 p.m.
9.15 p.m. to WATFORD	10.15 p.m.
9.30 p.m. to WATFORD	10.30 p.m.
9.45 p.m. to WATFORD	10.45 p.m.
10.0 p.m. to WATFORD	11.0 p.m.</

offered by the railway companies week by week.

An exhibit at the British Industries Fair (organized by the government and held concurrently in London and Birmingham) is another medium in which the British railways have joined forces in recent years. One of the most interesting developments for the purpose of conveyance of freight traffic, common to all railways in this country, is the merchandise container. Specimens of these receptacles, with other items illustrating improved services, have been features of the fair.



"Here's CHEAP TRAVEL old man! —

"See what it says here about these special cheap Period Rail Tickets. You can get them on various days throughout the week for 5, 8, 12 or 15 days to hundreds of places in the British Isles at much less than ordinary fares—the rate is about a SINGLE FARE AND A THIRD for the DOUBLE JOURNEY. That's a big saving, you know, especially for me with a wife and two youngsters. You can go by fast trains, too! And there's no doubt that you get a really comfortable journey by rail, and you get there *quickly*!

The Railways certainly are offering some good things in cheap travel this year. I'll call at the Station on my way home for one of these Period Ticket Programmes."

SOME MORE CHEAP TICKETS BY RAIL

TOURIST TICKETS to most resorts at Reduced Rates by any train on any day. You can break your journey and return any time within 3 months.

WEEK-END TICKETS at SINGLE FARE AND A THIRD for the DOUBLE JOURNEY by any train on Friday, Saturday or Sunday, returning Saturday, Sunday, Monday or Tuesday.

PLEASURE PARTY TICKETS for parties of 8 or more people travelling together for a day's outing at SINGLE FARE for the DOUBLE JOURNEY.

Programmes containing full information are obtainable at any Railway Station or Office:—

GREAT WESTERN, LONDON & NORTH EASTERN
LONDON MIDLAND & SCOTTISH and SOUTHERN RAILWAYS

YOU GET THERE QUICKER BY RAIL!



PARTIES OF 8 travel cheaper by rail

The more there are together, the cheaper they travel by Rail! It's perfectly true! Where there are eight or more adults travelling together for a day's outing all the Railway Companies issue tickets at HALF PRICE for the DOUBLE JOURNEY! To any Station you like, of course—and on any day.

Jolly little picnic parties are being formed every week-end to take advantage of these special rail facilities. All that need be done is to let the Railway Company know how many there are in your party, and when and where you want to go. Nothing more than that; and they will arrange everything else for a really enjoyable journey.

SOME MORE CHEAP TICKETS BY RAIL

PERIOD TICKETS for 5, 8, 12 or 15 days are issued on various days throughout the week at SINGLE FARE AND A THIRD for the DOUBLE JOURNEY!

TOURIST TICKETS to most resorts at reduced rates by any train on any day. You can break your journey, and return any time within three months.

WEEK-END TICKETS at SINGLE FARE AND A THIRD for the DOUBLE JOURNEY by any train on Friday (from 4 a.m.) Saturday or Sunday, returning Saturday, Sunday, Monday or Tuesday.

Programmes containing full information are obtainable at any Railway Station or Office:—

GREAT WESTERN, LONDON & NORTH EASTERN
LONDON MIDLAND & SCOTTISH and SOUTHERN RAILWAYS

YOU GET THERE QUICKER BY RAIL!



The Advertising Copy Features the Economy, Speed, Convenience and Comfort of Railway Passenger Service—The Several Forms of Reduced Rates Are Emphasized by Constant Repetition

St. Louis Combination Electric Switcher Tested

Four months' operation of 90-ton machine in regular switching service on the Illinois Central demonstrates its flexibility and economy

A NINETY-TON combination electric switching locomotive, built by the St. Louis Car Company in collaboration with the General Electric Company and recently delivered for test to the Chicago & North Western, was first placed in service on July 22, 1929, at the Chicago terminal yards of the Illinois Central. During the succeeding four months, this locomotive, developing a maximum tractive force of 50,000 lb. and capable of operation from an overhead trolley, from a self-contained storage battery or as an oil-electric unit, was in practically continuous 24-hr. daily service, except for one 8-hr. shift once a week for purposes of inspection. In addition to other advantages, it demonstrated marked flexibility in operation and fuel economy on a mileage basis as compared with an equivalent steam locomotive.

During the month of October, for example, the cost of fuel for this locomotive was only 13.03 cents per mile* as compared with an average cost of 16.85 cents per mile for all Illinois Central steam switching locomotives in the Chicago terminal. The locomotive was notable for the high percentage of serviceability, about 95.2 per cent, which it developed while on the Illinois Central. During operation, moreover, there were no delays to take coal, water, etc. There was also an appreciable saving in enginehouse expense, for handling

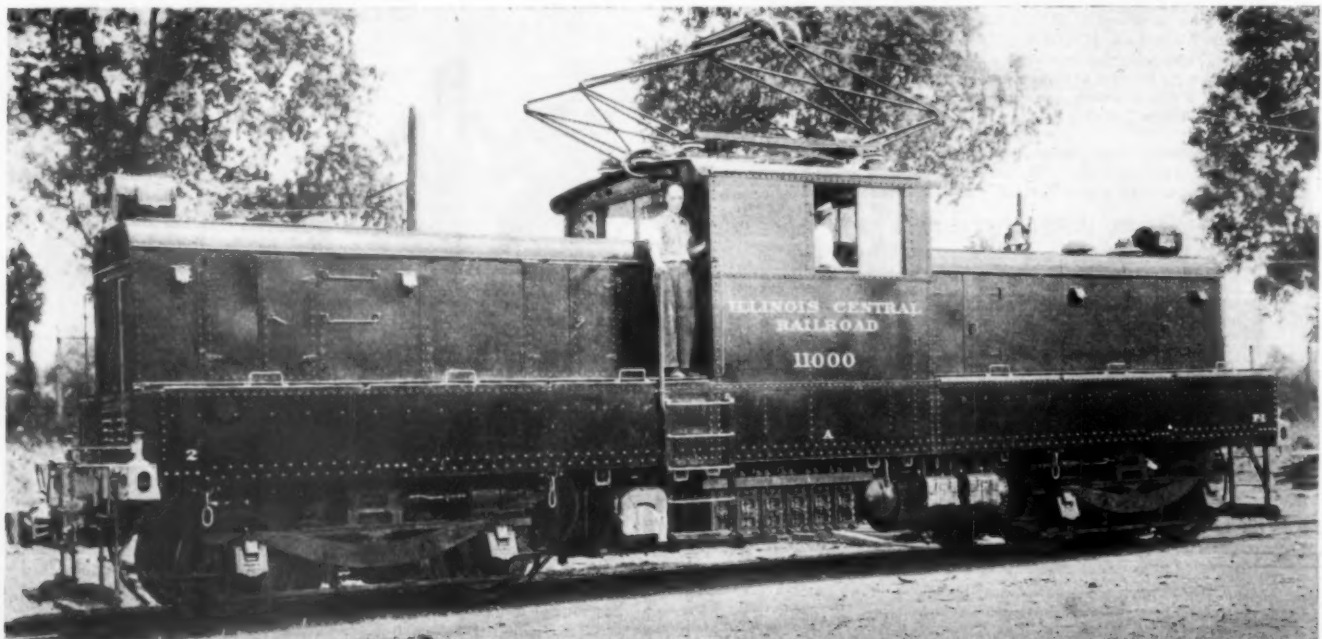
*In arriving at this figure, there was included an estimated cost of that part of the power supplied from the trolley, because the watt-hour meter on the locomotive was connected in such a way as to record the total power input to the driving motors both from the storage battery and from the trolley.

supplies, building and cleaning fires, boiler washing, flue cleaning, front end inspection, etc., required with a steam locomotive.

Three Sources of Motive Power Provided

While the St. Louis 90-ton combination electric switching locomotive has been designed primarily for classification and industrial switching in metropolitan areas, it can be used for road freight service within its capacity, operating from a 1500-volt trolley at speeds up to 40 m.p.h. It is equipped for operation as: (1) A self-contained oil-electric locomotive, supplemented by a storage battery; (2) a straight trolley or third-rail locomotive operating on 700 to 1,500 volts, and (3) a battery-electric locomotive where only part of the main trackage is electrified. The locomotive can, therefore, operate either on electrified or on unelectrified trackage, thus permitting its use as an economic power unit while a railway yard is being progressively electrified over a period of years. For service in yards adjacent to large cities, the locomotive presents the added advantages of smokeless and relatively noiseless operation. It is designed to negotiate rough track and curves with a minimum radius of 9 ft.

In general dimensions, this locomotive is slightly less than 49 ft. long between coupler pulling faces, 10 ft. wide over the cab and 14 ft. high from the rail to the cab roof. All details of the design conform to American Railway Association standards. The various units making up the power equipment are stand-



St. Louis 90-Ton Combination Electric Switching Locomotive Recently Tested on the Illinois Central

ard parts, thoroughly tested and in quantity production by reliable manufacturers. Motive power is furnished by two Buda 155-hp., six cylinder gas engines, arranged to burn distillate or furnace oil of 38 to 40 deg. Baume by means of Zenith fixed-adjustment carburetors. The engines, one in either end of the locomotive, are directly connected to two General Electric 66-kw. electric generators which furnish power to four G. E. 750/1500-volt traction motors geared to the truck wheels. An Exide Ironclad 180-cell, 544-amp.-hr. storage battery floats across the line. A total of 1,000 hp. is available in the traction motors when operating from the trolley.

The use of relatively small gas engines and electric generators in a locomotive of this capacity is made possible by the fact that they operate continuously at a high rate of efficiency and serve to store energy in the battery for starting or handling heavy cuts of cars. Added advantages resulting from the use of duplicate small units in regular production are the simplification of repairs and the decreased likelihood of the entire power plant being down for repairs at one time.

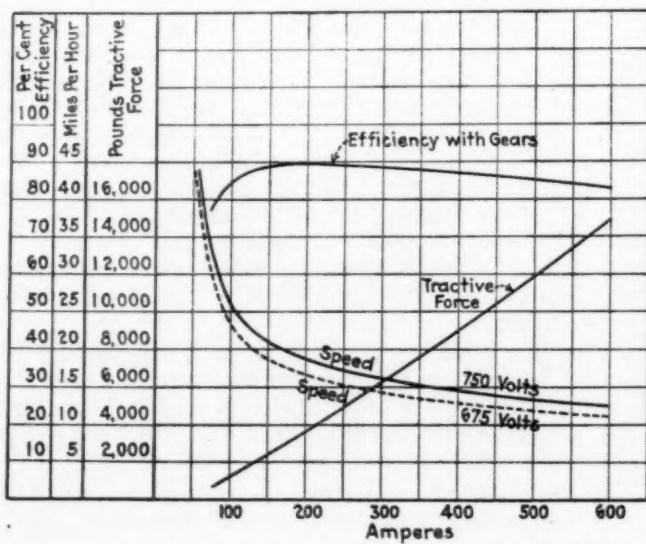
Auxiliary battery charging while operating under the trolley is provided for by means of a G. E. motor-

General Dimensions

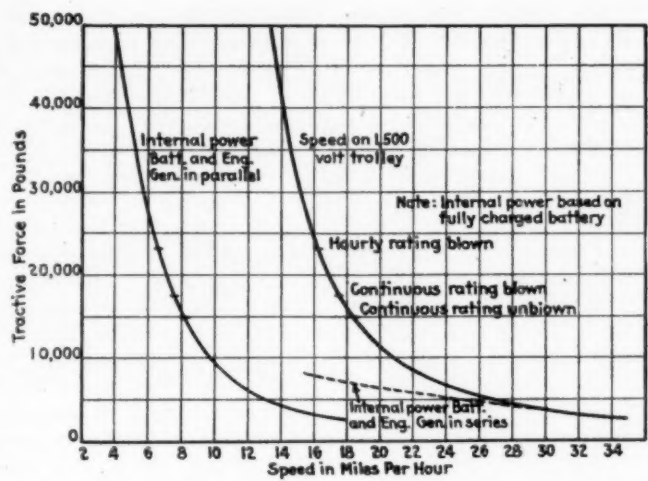
Length over end sills	45 ft. 4 in.
Length between coupler pins	48 ft. 7 1/2 in.
Length over cab	9 ft. 0 in.
Centers of bolsters	30 ft. 8 in.
Wheel base of trucks	7 ft. 8 in.
Height from rail to top of cab roof	13 ft. 8 3/4 in.
Height from rail to floor of car	4 ft. 8 3/4 in.
Height from rail to top of equipment chamber	11 ft. 2 3/4 in.
Height from rail to center of coupler	2 ft. 10 1/2 in.
Width over side sills	9 ft. 10 in.
Extreme width over grab handles	10 ft. 6 in.
Width over cab	9 ft. 10 in.
Width over equipment chambers	4 ft. 10 in.
Wheel diameter	38 in.
Least radius curve	90 ft. 0 in.
Drawbar pull	50,000 lb.

generator set, consisting of two 40-hp. 750/1500-volt electric motors, driving one 45-kw. 400-volt generator. A definite interlocking is provided to prevent trolley power coming on while operating on the 450-volt battery circuit and the battery circuit is also interlocked. The changeover is automatic, being accomplished by a suitable potential relay. The change from trolley to internal power, or vice versa, takes place in a few seconds and can be performed without reducing the speed of the train.

The two four-wheel trucks provided on this locomotive



Characteristic Curves on 750 Volts—Calculated from Design



Speed-Tractive Effort Characteristics of St. Louis 90-Ton Combination Electric Locomotive

are of the swivel equalized type with cast-steel center plates and bronze wearing plates. The wheels are 38-in. rolled steel, mounted on axles with 6-in. by 11-in. journals. The platform framing is built up of structural steel, properly reinforced, with Commonwealth steel bumper castings applied. The steel cab, substantially anchored to the locomotive frame, is designed to provide maximum visibility and the interior arrangement of control handles and equipment facilitates convenient operation. Additional equipment includes the usual switching locomotive auxiliaries, such as automatic and straight air brake equipment, air sanders, bell ringer and whistle, and two electrically-driven air compressors, each having a capacity of 50 cu. ft. per minute when delivering air at a pressure of 90 lb. per sq. in. The locomotive is provided with a suitable pantograph trolley, insulated for collecting current at 1,500 volts, and a General Electric type P. C. L. control with two controllers arranged for the necessary steps and combinations.

Method of Control—Capacity

The engines normally operate at somewhat less than full load. They are not controlled by the engineer, but are equipped with governors which regulate their speed at approximately 1,350 r.p.m. While the engines start and warm up on gasoline, they then run on furnace oil, the changeover being accomplished by three-way valves in the fuel lines operated from the cab. The same carburetors, made by the Zenith-Detroit Corporation, are used to gasify both fuels without adjustment, the sizes of the fixed jets being determined as a result of dynamometer and service tests. The engines are also equipped with Zenith oil filters, built up of thin laminations, and arranged for easy removal and cleaning of the filter stacks.

The Exide storage battery, designed for an average life of four years and acting as a large flywheel on the engine generators, has a capacity of 196 kw.-hr. at the six-hour discharge rate. Power stored in the battery is available for accelerating heavy loads on "kicking" cars, the battery again being charged during coasting or stand-still time. The energy which goes to the battery has certain losses in battery heating and gassing and is not all available for useful work. Some of the power output from the engines is also used for auxiliaries such as air compressors, control equipment, lights, etc. With the motors taking current 50 per cent of the time, however, an average of 86 kw.-hr. per hr. are available for the traction motors.

On battery and engine alone, the locomotive is designed to handle 300 tons trailing load continuously at 15.7 m.p.h., based on 7 lb. per ton for traction, and on generators working at their full rated output of 66 kw. each. Assuming a fully charged battery, the locomotive will handle, in emergency, on the battery only an average total train weight of 200 tons, making short runs for periods up to approximately six hours in length.

The maximum safe operating speed of the locomotive, limited by bearings or commutation, is 40 m.p.h. The weight of train which the locomotive will handle successfully in actual service will, of course, depend upon the grades, their length and frequency, number of stops, character of service, and other conditions. Referring to the speed-tractive-force curve, it is evident that when operating on internal power of the battery and engine, a tractive force of 43,200 lb. is available at 4.5 m.p.h., 20,000 lb. at 7.1 m.p.h. and 10,000 lb. at 9.7 m.p.h. This drawbar pull is based on internal power, assuming that the battery is fully charged. When operating off the trolley, approximately 43,000 lb. tractive force is available at 14 m.p.h., and 50,000 could be secured, providing the wheels did not slip. At a tractive force of 32,400 lb., the locomotive is designed to accelerate a maximum train of 1,200 tons, including the locomotive, on a level tangent track at a rate of approximately 0.2 mile per second, assuming that train friction amounts to 7 lb. per ton.

Hearings Resumed on Pennsylvania Line

WASHINGTON, D. C.

SOMEWHAT revised plans for the construction of the new line across Pennsylvania from Allegheny to Easton, proposed by L. F. Loree and the New York, Pittsburgh & Chicago Railway, were presented before C. V. Burnside, assistant director of the commission's Bureau of Finance, on December 17 and 18, when hearings were resumed on the company's application for a certificate authorizing construction of the line. A motion to dismiss the application was filed on behalf of the Baltimore & Ohio, the Pennsylvania, the Delaware, Lackawanna & Western, the New York Central and the Reading, on the ground that the company has no corporate power to construct the line and that the project has not been approved by the Pennsylvania commission but Mr. Burnside said that although the motion had not yet been considered by the full commission Division 4 had decided that the hearing should proceed.

An amended application for the certificate was filed which omits certain branch lines originally proposed and testimony was given by E. M. Basye, civil engineer, reducing the estimated cost, largely by reason of this change, to \$177,740,373, as compared with an earlier estimate of \$205,261,583. The construction cost was estimated at \$138,627,853, or \$490,111 per mile, while \$16,748,400 was added for equipment and \$22,364,120 for general expenses. M. V. Beckstedt, general freight agent of the Delaware & Hudson, presented elaborate exhibits as to the traffic possibilities of the new line and one showing that it would make possible a through route from Chicago to New York of 824 miles, as compared with 899 via the Pennsylvania, 944 via the New York Central, 986 via the Erie and 987 via the Baltimore & Ohio.

L. F. Loree, president of the Delaware & Hudson, emphasized the need for building across the Appalachian Mountains "the best possible instrument of transportation" to afford access to the seaboard to the 12½ states of the midwest where, he said, "for the first time in the history of the world an attempt is being made to build up an industrial population with a geographical center more than 1,000 miles from salt water."

Testimony of L. F. Loree

"There are in the United States" he said, "two or three major transportation problems, the solution of which rests with the Interstate Commerce people rather than with the railroads themselves. In the 13 northeastern states, occupying only 8 per cent of the continental area of the United States, there lives one-third of the population. Largely, the raw materials and semi-finished materials have to be brought into the territory and a large part of the finished products move out of it to other parts of the country.

"Contrasted with this are 12½ states of the Midwest where, for the first time in the history of the world, an attempt is being made to build up an industrial population with a geographical center more than 1,000 miles from salt water. Here is a population as large as that of England, nearly as large as that of France or Italy, but instead of being a maritime nation its access to the sea must be over this long distance. Further, its chief market is in the northeastern states and intercourse between these two great communities of 35,000,000 and 40,000,000 people is interrupted by the great range of the Appalachian Mountains. This range of mountains is significant, not only from its great height, more than 2,000 feet, not only because of the entire absence of water gaps, so that the movement must be made over the crest of the mountains, but even more by its great width, about 300 miles. The only road to pass around it is the New York Central on the north, but this materially lengthens the route. Another means of approach would be the deepening of the Barge Canal to allow Lake vessels to come down to the seashore, but from the standpoint of the steam railroad men the logical method is to build across the mountains the best possible instrument of transportation.

"In crossing the Rocky Mountains the railroads reach an elevation of from 5,000 to 8,000 feet. The New York, Pittsburgh & Chicago proposed line reaches an elevation of 1,560 feet. The Rocky Mountain roads have a rise and fall of from 22,000 to 60,000 feet; this line a rise and fall of 4,000. The Rocky Mountain roads have opposing grades of 2.2%; this line .3 of 1%. The Rocky Mountain roads depart from the line of the Great Circle drawn between their terminals by from 21% to 28%; this line by 7½%. The Congress has confided the destinies, not only of the railroads but of the country itself, to the fostering guardianship and control of the Interstate Commerce Commission. The future of these two great communities and of the country rests upon the decision they make in the disposition of questions and the significance this may have upon the race itself."

Two army officers testified as to the advantage of such a line from a military standpoint and a letter was read from Secretary of War Hurley to Mr. Loree saying it would be of decided benefit to the defense of the eastern territory in the event of war.

The hearing was adjourned to January 28 when testimony on behalf of the trunk lines in opposition will be presented.



Elevator Capacity at Vancouver Has Been Greatly Increased

Wheat Movement Necessitates Expanded Operations

Canadian Pacific line to Vancouver changes methods to meet increased traffic

EXCEPT for a few stray cars, no wheat was exported through the port of Vancouver prior to 1921. In that year, the movement began, amounting to 505 cars, for the crop year ending July 31. By 1923, this had increased to 12,087 cars, and by 1929, to 68,987 cars.

This sudden increase was brought about by the increased movement by water from Vancouver to the British Isles, via the Panama Canal, and favorable water rates have extended the territory shipping via Vancouver to points as far east as the Alberta-Saskatchewan border. Coincident with the increased movement via the Panama Canal, there has been an annual increase in the number of cars of wheat shipped to the Orient.

The first few years of this sudden movement placed a rather severe strain on the elevator capacity at Vancouver, but this capacity has shown a rapid and remarkable increase from 1,250,000 bu. in 1921 to 4,000,000 bu. in 1923, and 15,060,000 in 1929. The year-by-year growth of the grain movement, since its inception in 1921, and the parallel increase in storage capacity at the port of Vancouver, are shown in the table.

Railway's Facilities Taxed

While this wheat movement via Vancouver is by no means as large as the eastward wheat movement, nevertheless, it imposed a large amount of additional traffic upon the British Columbia district of the Canadian Pacific, which, coupled with the large increase in exports generally through the port of Vancouver, taxed the capacity of the district to the utmost. To handle the traffic with the highest degree of efficiency over this exceedingly mountainous district, the C. P. R. set about immediately improving its facilities and methods in this district to increase the capacity of the line to meet the situation.

Because of the physical contour of the country in

the vicinity of Vancouver, where rugged hills and mountains extend down to the rivers and the bay, it was necessary years ago, in providing terminal facilities for Vancouver, to locate the yard at Coquitlam, 17 miles east. When the increased traffic came, there was no room for a large terminal yard in the immediate vicinity of Vancouver. This situation was met by constructing tracks for storage space immediately adjacent to the elevators, and by constructing a long, narrow yard at a point about five miles east of Vancouver, adjacent to one of the largest grain elevators, which is now used as an intermediate yard for grain in cars arriving for the elevators along the Vancouver water front.

The situation has been still further relieved by the installation of the permit system to control the movement via Vancouver. Under this system, the elevator capacity at Vancouver is watched carefully and permits for shipment via Vancouver are issued only so long as there is sufficient storage capacity available to take care of the contents of the cars upon their arrival there. By these means, the terminal situation at Vancouver has been placed on an efficient basis. In addition, the capacity of the intermediate yards at Revelstoke, B. C., and North Bend have been increased by over twelve thousand feet of tracks in each case, giving an increase in the working capacity of the yard of 50 per cent at Revelstoke and nearly 100 per cent at North Bend.

Road Operations

While the terminal facilities and methods were being changed to meet the changed conditions, the movements of trains on the road were also being revised. The largest engines which the Canadian Pacific then had could handle the tonnage only with a large number of additional train movements, so many, in fact, that in the mountain territory, serious congestion resulted.

To increase the capacity of the line, the installation of automatic block signals was begun, first in the territory where helper engines were required and the need was greatest, and later these installations were extended into adjacent territory, until the road is now equipped with absolute permissive block signals from Field to Golden; Beavermount to Revelstoke; Spences

Grain Movement via Vancouver and Elevator Capacity at That Port

Crop Year Ending July 31	Number of Cars Handled	Elevator Capacity (bu.) (thousands)
1921	505	1,250
1922	3,021	2,250
1923	12,087	4,000
1924	38,903	4,800
1925	16,790	4,800
1926	37,748	6,505
1927	24,801	6,505
1928	59,518	7,570
1929	68,987	14,070

Bridge to Ruby Creek; and through the harbor district of Vancouver, a total distance of 215 miles. These signals have aided materially in handling the increased train movement, which, on the Cascade subdivision on the peak day of October 20, 1928, amounted to 18 trains in each direction.

Larger Power Found Necessary

To handle increased tonnage and thus reduce the number of train movements, a locomotive has been developed by the C. P. R. for the express purpose of handling these heavier trains through the mountain territory. This locomotive is known as the T-1-A type, a 2-10-4 locomotive, with the four-wheel trailer truck equipped as a booster unit. It is rated at 400 per cent, as compared with a rating of 275 per cent for the R-3 type of locomotive, which was the heaviest previously in use on this district. The new locomotive has a tractive effort, with the booster, of 77,200 lb., and a boiler pressure of 275 lb. Its principal dimensions are as follows:

Cylinders	25 1/2 in. x 32 in.
Diameter of driving wheels	63 in.
Firebox heating surface	377 ft.
Graze area	93.5 ft.
Weight on drivers	312,500 lb.
Total weight of engine	438,500 lb.
Weight of tender, loaded	286,000 lb.
Oil capacity (imp. gal.)	4,500
Water capacity (imp. gal.)	12,000

The tonnage handled by these locomotives varies with the difficulty of operation on each subdivision. However, on the C. P. R., the rated tonnage is adhered to closely, and a check made of the operations over the last seven months shows that 96 per cent of the freight trains handled their full tonnage on the British Columbia district.

Track Improvements

The increase in traffic, with its requirement of heavier trains and locomotives, caused accelerated wear of the track and a program of rail relaying was begun. The existing 80 and 85-lb. rail in the main line was replaced with 100-lb. rail. This program has proceeded to the point where, of the 651 miles of main tracks of the British Columbia district between Field and Vancouver, of which 146 miles is second track, 420 miles have been relaid with 100-lb. rail.

Another handicap to the efficient handling of this increased traffic was the bridges. The existing steel bridges limited the weight of the locomotives that could be used, the double-heading of trains, and, in some cases, the speed of trains over them. A program of bridge replacement was begun, and the renewal of 24 steel bridges between Field and Revelstoke has just

been completed, the new structures having ample capacity to take care of the new and materially heavier locomotives previously described. The bridges between Revelstoke and Kamloops were renewed or reinforced several years ago to bring them up to the then existing standard, but recent developments in locomotives now require that four more of the bridges in this territory be renewed. Work is now in progress on the renewing of four steel bridges between Kamloops and North Bend, and at two of these bridges line diversions approximately one mile long are being built, to give better grades approaching the new bridges. In addition, there are nine other bridges between Kamloops and Vancouver which will have to be renewed to accommodate the latest locomotives. Work on the foundation of two of these bridges has just been opened up.

Handling of Empties

Since the preponderance of traffic has been eastbound for years, it has been necessary to haul a large number of empty box cars westbound for loading east. This is still necessary at certain seasons of the year, but the number of empties hauled west has decreased materially with the increase in the westbound grain movement. Of course, during the height of the grain shipping season, when the prairie provinces are demanding cars, the inbound cars are made up into trains of empties as soon as they are unloaded, and rushed back to the grain loading points on a fast schedule, but, towards the end of the season, and for some time thereafter, it is no longer necessary to send trains of empties to Vancouver to handle the eastbound movement. The distribution of cars is handled by the superintendent of transportation in Winnipeg, who is in immediate touch with the grain-loading situation, so that there is never any danger of cars being held at Vancouver for loading eastbound, at times when they are needed in the grain fields.

* * *



Approaching San Bernardino, Cal., through Cajon Pass on the Atchison, Topeka & Santa Fe

Functions of The Interstate Commerce Commission*

*What might happen if it were
done away with*

By Ernest I. Lewis, Chairman

THE word "just" appears in the interstate commerce act 48 times and the word "reasonable" 66 times. We may, therefore, well come to the conclusion that the first and foremost of our functions is to see to it that rates, fares and charges, practises and operation are just and reasonable.

To accomplish the ends directed by Congress we have a staff of 2100 people. There is a maze of activities. A few illustrations of these activities and their purposes will suffice. One-third of our staff is at work ascertaining the value of the carriers as a basis for just and reasonable rates; by later direction of Congress valuation is used for certain other purposes, but that does not change the fact that the primary purpose is to lay the foundation for equitable rates. Another large segment of the staff keeps its eyes on accounts and statistics of carriers. To carry on these activities we have required and established uniform accounting. This is designed as a means of knowing whether rates are just and reasonable, and whether the business of transportation is being honestly, economically and efficiently conducted.

Another considerable segment is busy with matters having to do with the regulation of securities, licensing new and authorizing abandonment of old lines, the organization of carriers, and other kindred matters. But all this, in final analysis, is designed to promote the maintenance of an adequate, healthy system of transportation, and proper practises. Other groups are busy seeing to it that the railroads, the equipment, the operation is safe, and made safer, for traveler, shipper, employee. We have lawyers, investigators, inspectors, inquirers and a library of orders, rules, and reports. But when we sum up all these and others of our various activities again we find that they all are designed to insure that in the world of transportation there be fair play, and just equality of opportunity between persons, commodities, localities, and that there be maintained a system of transportation that is adequate in service and safety to our national needs.

Changed Concept of Regulation

Congress' concept of regulation has changed somewhat. Originally regulation was set up as a protection for the shipper or traveler against impositions, abuses, grave injustices and political and railroad domination. But, as these evils were eliminated, the concept of public interest broadened. In 1920 we find Congress taking certain steps to protect the country as well as its individual travelers and shippers, localities and descriptions of traffic.

The country had been brought face to face with

the fact that there are immutable laws that man-made laws cannot revise. This country is growing. Its railroads were lagging behind. Money was not flowing freely or sufficiently to this public service. A half to a full billion dollars a year was, and is, needed. Congress statutorily declared the constitutional right of fair return, and a policy of building up and maintaining an adequate system of transportation. To this end it even declared that the weak and short lines be brought into strong systems by consolidation of all carriers of continental United States into a limited number of systems. The right of the user to the highway on just and reasonable terms was balanced with the declaration that the highway must be kept adequate to the needs of the nation. The Supreme Court in the Dayton-Goose Creek case has observed that Congress thus placed more than ever the carriers under the "fostering care" of the Commission.

There have grown up in this country individual businesses and associated groups of businesses that have great powers of persuasion and coercion over carriers. Their methods and devices sometimes are somewhat questionable. The art of litigation and attack has been greatly perfected. The self-interest of business is sometimes short-sighted. Certainly if it stops to think it must realize that one of its absolute essentials is adequate facilities of distribution. Congress seems to be of no uncertain mind about it. It has directed us not even to let sovereign states block the development and maintenance of those facilities. Even in enacting legislation to afford relief to distressed industries, Congress held up its warning finger and said that in establishing such rates for agriculture that the "lowest possible lawful rates" must be "compatible with the maintenance of adequate transportation service."

Now that we have had our sketchy view of the commission and its duties and functions, let us begin to close our little visit by performing a feat of mental legerdemain. I have debated whether I should resort to such a device because you as businessmen are not inclined to deal with the improbable. If it does seem to you to be resorting to wild speculation, let me attribute such recourse to the queer mental state one gets into after listening for years to the hair-triggered theories and impossible conceptions laid before us in trial and argument by eminent counsel.

Just one of many illustrations will suffice: It is urged on us that we should arrive on valuation for rate-making purposes by imagining that a thing which exists does not exist and then by reconstructing the existing thing through country, towns and cities that could not exist or be in existence if the thing that does exist had not existed and does not exist. This is, nevertheless, one of the tests of value which has approval of the Supreme

* From an address at a meeting held under the auspices of the Ways and Means Committee of the Chicago Association of Commerce, Chicago, Ill., on December 18, 1929.

Court of the United States. So I have license to test the functions of the Interstate Commerce Commission and to show by contrast what the "functions" of the Interstate Commerce Commission have produced, by recourse to supposing a thing that no one is suggesting and creating a situation that could not be permitted to exist. With such apology I ask you to suppose that when we go out of this building we are met by newsboys crying: "Extra—all about the abolition of the Interstate Commerce Commission" and we read that all regulation of common carriers has been removed.

If the I. C. C. Were Abolished

What would your first reactions be? No doubt in many quarters there would be freer breathing and sigh of relief. But I am certain it would not be long before you began to consider how you would be affected now that again the railroads are free to adjust their rates, service and practices according to their judgment of what their interests require, with only the courts or Congress available for redress of grievances that might result.

I do not want to spend much time in knocking down this straw man. I am going to content myself with only touching high spots. First, we must assume that if the functions of the Interstate Commerce Commission were suspended we would move back to that state of public attitude toward pools and communities of interest which prevailed before the passage of the Interstate Commerce Act. Without competent public supervision, public opinion would not sanction combinations of interest which now knit together the carriers in particular sections. Therefore, at the very outset we find that the present national attitude toward the railroads is founded and reliant on the existence of the functions of regulation. Another assumption we have to accept is that if the restraining hand of regulation were removed there would be a measurable return to free-handed competition by the carriers. Some questions automatically arise in our minds.

In the business world stability and relationship of rates, generally speaking, are more vital than the level of rates. On the reliance that rates will be stable and equal and fair, business makes its contracts months, years in advance; industries are established; billions are invested. Would stability be rocked by any such change as we have proposed in this mental legerdemain? Let me cite you a page from the good old days of free hand and free aggressiveness. In the year 1869 there were 13 changes in the first-class-all-rail rate between this city and New York; in 1870 and 1871 there were 11 changes; in 1876 there were 6 changes and in the period between January 1, 1862, and December 17, 1888, there were 84 recorded changes. The extreme variation in a single year was from 45 cents to \$1.88. The rate got as low as 15 cents between July 28 and December 18, 1876. Doubtless, some of these changes were attributable to the opening and closing of lake and rail routes, but enough remains to illustrate how thoroughly correct Albert Fink, the great publicist of his day, was in saying when he appeared before the Cullom committee in 1886, that railroad managers were prone to follow their individual propensities, wherever they might lead.

While I have cited the first class rate changes, these changes were more extreme if anything in the commodity field of rates. Nobody knew what his competitor was paying. It is true there were published rates but there were rebates, drawbacks and every other device extended to those who had the power to coerce or

those who were favored. Certain favored shippers not only fixed by private agreement their own rebates but also dictated what should be charged their competitors and demanded and received part of the higher charges collected from such business rivals. The same destructive wars were waged in the passenger field. In the Chicago that I first knew I recall a time when we went to Indianapolis for 25 cents. I have heard it said that at one time it was lower than that. In those days anyone who commanded traffic, influenced public opinion, or had to do with legislation or had a modicum of influence to bear on it, never paid fares for transportation, and those who did not have any influence patronized the ticket scalpers whose places lined the approaches to all the railroad stations.

Rate Levels

Then we come to the level of rates. In the absence of regulation, would these levels advance? It is reasonably certain that carriers in many sections would feel a strong impulse to push rates, in the aggregate, upward. We know that, because our dockets carry such petitions and in arguments made on these applications there is evidence of willingness on the part of railroads collectively to minimize to that extent strong individual differences of interest in particular rates. But this is under a system of regulation in which each carrier knows that any move by its competitors will be subjected to the scrutiny and question of the Interstate Commerce Commission on the application of railroads or shippers, or even by the commission acting on its own initiative.

The inconsistency of carriers joining in a request for a general increase in rates to protect the revenues as a whole and at the same time breaking the rate structure on particular rates for their own individual benefits is manifest. But we know such things occur even under regulation. Speaking generally, market competition would exert far more influence over rates than it is allowed to exert today. Therefore, if rate regulation were removed we might expect that rates as a whole might rise for a time but then there would appear a tendency to cut strategic rates here and there, until the general level would begin a downward course which might benefit some but would make increasingly difficult the existence of the service which the shippers now enjoy.

Communities in the "good old days" faced the problem of maintaining themselves, not solely, as now, against greater efficiency on the part of rival communities, but against the reductions in rates which such communities obtained by virtue of their size or competitive strength. With removal of the restraint of regulation, would not such discriminations stage a new growth?

Unless prohibited by legislative fiat, such as illustrated by the rigid long-and-short-haul bills introduced into Congress, the carriers would take immediate steps to make a fight for an increased part of the transcontinental business. It is safe to assume that co-operation with government barge lines would be more difficult to secure. It would not be stretching the imagination very far to assume that an effort to drive the barge line out of existence would result. New violations of the long-and-short-haul clause resulting solely from rail competition could be expected to return.

Motor competition on the other hand would doubtless become more serious than it is today. To a considerable degree state regulatory agencies have considered the interests of the steam railroads and their patrons in granting or withholding certificates of opera-

tion. With the railroads again operating on "business principles," any special consideration of them would immediately go by the boards. Both the railroads and the public would lose under such conditions.

Removal of the restraining hand of regulation would result in building of competitive lines with possible advantages to particular sections but with possible losses to the country at large. The creation of through routes and the establishment of joint rates in the interest of the shipping public would have an uncertain future. Circuitous routing and cross-hauling of freight would produce much greater wastes than they do at present. Competitive wastes would manifest themselves in countless other forms. The abandonment of service, or of entire lines, would be merely a matter of business judgment on the part of the carriers. There would be no agency to require the construction of needed lines.

Our far-reaching organization for securing, by planning and anticipation, good car service at all times and for preventing emergencies, would not be available. The shippers and carriers could no longer avail themselves of the auspices of an experienced and neutral agency for the settlement of service and other disputes. Service under such conditions was, and with reasonable certainty would be, of a lower quality and less abundant than it is today. Close scrutiny of issuance of securities would be withdrawn. Investors and others interested in the financial and operating practices of railroads would not have recourse to a great body of reliable historical and current information to aid them in judging the value of the particular securities or the present or likely future earning power of particular properties under the new conditions.

Without the constant attention we give to proper accounting and statistical requirements and policing to see to their observance, railroad accounts would revert in some measure to the unsatisfactory condition which characterized them in 1907. Is such a statement an exaggeration? Let me cite the fact that within the last five years in policing property accounts, the records of certain carriers were found most unsatisfactory and unreliable and needed 15 per cent correction. And this was under regulation. In his appearance before the Cullom committee, Fink pointed to the fact that "the first step railroad companies take when they are actually losing money as the result of unbridled individualism, is to cut down the wages of employees." "Then," he said, "that is sometimes followed by riots and bloodshed."

I repeat that I have only resorted to this wild flight of imagination as a means of illustrating what has been done away with by the exercise of the functions of, and the powers vested in, the commission. Of course, the mental reaction is positive—it would not do. The confusion could not be permitted. But do not think for a moment that were it not for the existence of regulation such reversal to the "good old days of free competition" would be impossible. The unthinkable sometimes occurs. We have to go no farther back for confirmation than to the recent world war. Its origin came out of much the same causes that produce railroad wars—that is, ambitions, rivalries, competition. The spark that exploded the world war began with an individual act in an obscure unit in the family of nations. So with our railroad wars. The act of one individual controlling an obscure unit of the railroad structure has in the past, and would in the future, if free rein were given, precipitate a disturbance that would become nation-wide.

I do not have to deal in the realm of uncertainty when I make that statement. I could be specific and cite you numerous instances that have occurred, and others that

would have occurred but for regulation. The strong-headed and hard-willed individualist has not entirely disappeared from the railroad world. There still is in existence that species of railroad managers which Fink before the Cullom committee described as resorting to various devices to secure advantages over competitors. And then there is another thing which under the cover we are told is growing. It is a phase of pressure exerted by large shippers and powerful interests on those who are managing the railroads, going to the extent of dictating purchase of materials and supplies of concerns in which these special interests are directly or indirectly interested. Some upright railroad executives admit that even under regulation they are unable to withstand these pressures. It is either a case of buy or lose traffic. So with railroad giants with the will to conquer, on the one hand, and on the other strong men who even under regulation are unable to stand against domination of large shippers, I am not so certain that if regulation were completely removed, we would not be pretty well started back on the road to the days of the 70's, 80's and 90's.

Were the functions of the Interstate Commerce Commission eliminated, direct Congressional action would follow. With reasonable certainty Congress would soon throw up the task of regulating rates and practices in their minutiae. It could without difficulty, and if of the mind, enact blanket legislation, such, for illustration, as that provided for in a resolution introduced into Congress which provides in effect that rates in excess of those in effect on February 28, 1920, just before our 25-40 per cent increases at the time of the return of the railroads to their private owners, shall be unlawful. Of course resort could be had to the courts to prove confiscation. But what body would be equipped to meet there the carriers' army of experts to establish value; or to reveal the intimate affairs of the carriers?

And so I must draw to a close. I hope that I have accomplished a two-fold purpose: (1) to show you what the commission is doing and (2) to challenge any view that may exist that the commission is merely a troublesome unproductive factor.

In view of the accomplishments under regulation and the grave responsibilities that are placed on us we have a right to expect from all the public an opportunity to continue to work along broad national lines without political interference. We claim no infallibility of judgment, and in fact, we have set up corrective machinery to deal with those fallibilities. But we do insist on the right to free exercise of judgment. If that judgment is found to be lacking in soundness the direction lies in improving the personnel of the commission. We should be given more time to devote to large problems, as suggested by President Hoover in his recent message to Congress. We do not have much opportunity to cultivate public good-will, if for no other reason than that we do not have the time for making contacts, such as this, or to get before the public the general scope and character of the work and purpose of the Interstate Commerce Commission.

In bidding you farewell on this occasion, let me state that I address you in the 43rd year of interstate regulation by the Interstate Commerce Commission. The good reputation of the commission has never been clouded by scandal. Whether it has grown in public esteem I do not undertake to say. But we do know that additional powers and duties are constantly being given—even forced—on us. And it is a fact that when the creation of new commissions to deal with federal matters is proposed either in or out of Washington, we read with some satisfaction that the proposal is to establish a body "like the Interstate Commerce Commission."

I. C. C. Orders Oregon Line

WASHINGTON, D. C.

WITH four commissioners dissenting, the Interstate Commerce Commission has issued an order requiring the Oregon-Washington Railroad & Navigation Company, over its protest, to construct a line from a point near Crane, Ore., across the "high desert" in the central part of that state to a connection with the Southern Pacific at or near Crescent Lake, a distance of 185 miles. The order was issued on a complaint filed by the Public Service Commission of Oregon, which estimated the cost of the line at approximately \$9,000,000, while the railroad estimated the cost of construction and equipment at \$11,717,677. The requirement that the line be built was opposed by the Oregon-Washington and other railroads made defendants in the case on the ground that the proposition is economically unsound and also on the legal ground that the commission has no authority in law to require it.

Commissioners Brainerd and Farrell, dissenting, agreed with the railroads that the Commission has not the necessary legal authority, while Commissioner Porter took the position that sufficient justification had not been shown in view of the judgment of the company against it. Commissioner Woodlock also dissented.

Complainant had asked that one or more of the roads serving the state be required to build such a line to serve what is described as "probably the largest area within the United States which is without rail facilities." Defendants in their answers averred that there is no public necessity, interest or convenience to be served by the requested construction and that if paragraph 21 of section 1 of the interstate commerce act, or any other paragraph thereof, be construed as conferring upon the commission authority to require the construction, such provisions are unconstitutional in that they would operate to deprive them of property without due process of law and for public use without just compensation.

Passing upon the question of authority the report, by Commissioner McManamy, which follows a proposed report by him to the same effect, says it is not the province of the commission to pass upon the constitutionality of statutes enacted by Congress and that the language of the paragraph empowering the commission to authorize or require a carrier to provide itself with safe and adequate facilities... "and to extend its line or lines" is "so clear and its meaning so plain that no difficulty attends its construction."

An affirmative finding is also made as to the two conditions which he says must be satisfied before the issuance of an order: (1) that the extension is reasonably required in the interest of public convenience and necessity, and (2) that the expense involved will not impair the ability of the carrier or carriers involved to perform their duty to the public. Before making the latter finding a financial statement was set up for the Union Pacific System and it is stated that it is expected that the cost of the construction will be financed by the Union Pacific, which controls the O.-W. R. & N. through the Oregon Short Line.

Commissioner Brainerd in his dissenting opinion cited the recent decision of the Supreme Court of the United States in the Los Angeles Passenger Terminal case in which the court said that if Congress had intended to give an executive tribunal unfettered capacity for requisitioning investment of capital of the carriers and the purchase of large quantities of land and material in an adverse proceeding, "Congress would have made its

meaning far clearer and more direct than in the present meager provisions of the Transportation Act."

Commissioner Farrell said that in his opinion "the extension of lines referred to (in the act) cannot properly be construed as covering a new line of railroad, but must instead be confined to such extension as is necessary to enable the carrier to serve the public adequately with some railroad which has already been constructed and in territory which has already been occupied by the carrier."

The Oregon commission had expressed the opinion that the development of central and western Oregon is being seriously hampered due to the absence of an east and west line of railroad across the state and that the proposed construction would in reality be a partial completion of a program started by the Union Pacific lines many years ago. The route proposed follows an original survey made by the Union Pacific. Much of the report is devoted to a review of the conflicting evidence presented as to the character of the country traversed and estimates of the traffic to be expected. The O.-W. R. & N. took the position that the nature and resources of the territory are such as to prohibit development of sufficient traffic to sustain the line and that existing rail facilities are ample to properly take care of all needs of eastern and western Oregon and of southwestern Idaho. The Southern Pacific took a similar position and also urged that as a matter of law it cannot be compelled to divert traffic to the cross-state line when such diversion would result in short-hauling itself. As to these points the majority report says in part:

The difficulty in estimating development which will follow the construction of an extension into this virgin territory is apparent. In neither the estimates of complainant nor defendants is any consideration given to the development which would follow short extensions or branches from the proposed construction. It is not reasonable to presume that such branches would not be constructed. Little attention has been given to traffic moving from the east to western Oregon and which would logically move via the proposed route. There is also substantial evidence that construction of feeder lines by other companies in western Oregon would follow construction of the proposed extension and that such lines would bring to the proposed line considerable traffic.

The matter of establishing through routes and joint rates from western Oregon to the east via the proposed extension can not properly be disposed of except upon an adequate record dealing with all the facts relating thereto. We can not require the establishment of through routes and joint rates at this time because the line is not yet in existence. It does seem reasonable to assume that a substantial volume of western Oregon traffic will move to the east via the proposed line when consideration is given to the shortened mileage and the savings which it is shown can be brought about in transportation costs through the use of this route. After careful consideration of complainant and interveners traffic and revenue estimates, and of defendants' criticisms thereof, we are firm in the belief that the extension would be a valuable asset to the Union Pacific System and would be an effective feeder for that system after a reasonable development period. At the same time the construction would bring about development in a vast territory. It would be of material benefit to the present Ontario-Burns branch.

The convenience and necessity of the public depends not at all upon the willingness or unwillingness of the carriers to provide the facilities or render the service sought. The requisites set forth in the statute are practically identical whether the construction is to be voluntary or compulsory. Case after case might be cited where applications of the carriers for certificates covering construction under less favorable circumstances, as related to probable traffic, revenues, and public benefit, than are present in this case have been granted. There can be no justification for granting requests of the carriers under given circumstances and under similar or more favorable circumstances denying appeals of the people for relief and for a reasonable chance to develop a great State. There can be no better criterion or guide to follow in determining what the carriers, including defendant carriers, consider a prudent investment which is justified in the interest of public convenience and necessity than the instances where certificates have been sought and granted for construction of rail extensions.

John M. Hansen, Standard Steel Car Company Chairman, Dies

President of American Railway Car Institute and pioneer in the development of steel cars

JOHN M. HANSEN, chairman of the board of directors of the Standard Steel Car Company and president of the American Railway Car Institute, died suddenly on December 13 at La Rochelle, France, where he was stopping in the course of a European business tour. According to the cable which brought the news of his death, Mr. Hansen was found dead in his hotel room where he had gone shortly after leaving the plant of the Société des Entreprises Industrielles Charentaises of La Rochelle.

An outstanding man of vision in the railway supply industry of the United States, Mr. Hansen's business career coincides with the development and extended use of steel cars in both the passenger and freight services of this country's railroads. He was a pioneer in this field, being the designer of the first steel freight and passenger cars used in commercial service here. The first steel freight cars made their appearance on the Bessemer & Lake Erie in 1896. These were retired in 1928 and have now become a permanent exhibit at Greenville, Pa. (See *Railway Age* of July 21, 1928, page 113.) The first steel passenger train car made its appearance about 10 years later.

Commenting upon this pioneering work in his presidential address at the 1929 annual dinner of the American Railway Car Institute, Mr. Hansen said:

"When steel cars were first suggested to the railways, in but few cases did the idea meet with favorable comment or consideration. It was my privilege and opportunity to have been associated with Charles T. Schoen and to have assisted him in designing, selling and building the first steel freight cars in this country. We began our first serious study of the steel car in 1893. It was again my privilege in the year 1904 to have had associated with me Andrew Christianson, chief engineer, and others of the Standard Steel Car Company, in designing and building, what I believe also to be the first all-steel mail, baggage and passenger cars built in this country.

"In both cases there was much doubt in the minds of those who constituted the car building industry at that time as to the merit and probable success of the steel car. The Schoen company at that time was not in the car building business—had never built any kind of a car. This made our pioneering work a bit hard, but it lasted for a short time only, because soon the railway officials began to see the possible merits of the steel car and so those in the car building business, one by one, fell in line and equipped themselves to build the new steel cars."

Further manifesting his keen insight into the problems of the railway equipment industry and his broad vision of opportunities at hand for foresighted manufacturers, Mr. Hansen continued in the same address to say:

"I fear sufficient thought has not been given to the seriousness of the situation brought on by the great decline in car purchases and how to solve such new problems as might be forming themselves in the industry. For instance, we know that new means of transportation have been developed which have reduced the needs of the regulation passenger car equipment such as we have been furnishing, but we have done little in the development and pioneering work and have given little thought to the opportunity that was in our hands.

"Now we have new companies thoroughly organized and equipped to build the new transportation equipment, such as automobile trucks for freight and express and buses for passenger car service. A

great industry has been supplied to furnish this new type of equipment, all of which in my opinion should have been the business of this industry... Is it not apparent therefore that we should unite ourselves more seriously than ever before in the study of the several basic things that underlie our industry and affect its future?... Our first concern should always be, through invention or otherwise, to make the business secure to our industry."

John Morrison Hansen was born in 1863 in Butler



John M. Hansen

county, Pennsylvania, and was graduated from the Western University of Pennsylvania (now the University of Pittsburgh). He first entered the employ of the Schoen Pressed Steel Company as draftsman and later rose to be its chief engineer. When the Schoen Pressed Steel Company was merged into the Pressed Steel Car Company, Mr. Hansen became chief engineer of the latter and afterwards was assistant to the president. He formed the Standard Steel Car Company in 1902 and became its first president. Later Mr. Hansen relinquished the presidency but retained the chairmanship of the Standard Steel Car Company board of directors until the time of his death. He was also a director of the Baldwin Locomotive Works.

During the World War, Mr. Hansen made his headquarters in Washington, where he was a member of the Council of National Defence. His work was connected with the ordering and designing of the 100,000 freight cars for the United States Railroad Administration. He also supervised the designing of the 14,000 freight cars which the United States government sent over to France for the use of the American Expeditionary Forces, and was responsible for the equipping of these cars with French type couplers. His foresight in this latter regard was proved, when, at the close of the war, the French government purchased these cars, and had them available for immediate use over all the French railroads in connection with pressing reconstruction needs. Had these cars been equipped with American type couplers, France would have been put to the great expense of conversion and subjected to long delays due to the lack of labor and material. In addition, during the War, he continued to supervise the activities of the Standard Steel Car Company, which was engaged in building 38,000 railroad cars for the French government, and gun carriages and ammunition for the Allies.

N. & W. Criticized for Air Brake Practices

WASHINGTON, D. C.

RESPONSIBILITY for a rear collision of freight trains on the Norfolk & Western at Lick Branch W. Va., on November 1 is placed, in a report by W. P. Borland, director of the Bureau of Safety of the Interstate Commerce Commission, not only on the engineman and conductor for neglect to make air brake tests as required by the rules, "but also upon the entire staff of division operating officers for permitting and encouraging violation of definite rules with respect to air brake tests until it had become common practice to disregard the requirements of these rules on the division."

A westbound freight consisting of 28 loaded cars and a caboose hauled by electric locomotive 2504, moving at about 20 miles an hour on a steep descending grade (varying from 1.475 to 2.40 per cent) collided with a preceding freight which had been stopped by a flag; and the engineman and one brakeman were injured. The collision was due to the air brakes being inoperative because an angle cock was closed on the front end of the first car; and the report consists of a 15-page description of the circumstances of the accident and discussion of the negligence which had led to it.

The rule requiring a test of the air brakes before starting down the grade was not observed, and it is found that this negligence was habitual. The two brake-

men who had attended to the coupling of the locomotive to the train had ridden in the rear end of the locomotive so that if any outsider had been on the train or had had access to the angle cock, they would have seen him. Officers and employees undertook to justify the lax practices in regard to brakes, though it was admitted that requirements had not been rescinded or modified.

If appears that the speed of trains on descending grades is controlled by regenerative electric braking but the fact remains that, in case a stop is required to be made, the friction brakes must be depended upon; and, therefore, says the report, enforcement of the rules is just as essential for electric trains as for steam trains. It was brought out during the investigation that on trains hauled by electric motors, it has not been the practice to make running tests of the brakes before starting the descent of grades on this division.

Continuing the report says: "In addition to the fact that the rules relating to the operation and testing of air brakes were not rigidly observed, the investigation disclosed that the requirements of the Norfolk & Western in respect to maintaining and testing brakes have not been revised to conform to the current standard practice. The rules which were in effect at the time of this accident conformed to the standards adopted by the American Railway Association in 1923; revised rules were adopted as standard by the American Railway Association in 1925; superseding the 1923 code, but these revised rules, so far as they apply to engine and train crews, had not been accepted or adopted by the Norfolk & Western. The 1925 code of rules was one of the results of an inquiry entered upon in 1922 by the Commission. The Norfolk & Western was one of the respondents in this proceeding. One of the conclusions of the commission at that time, as stated in its report, was that improvements in the operation of power brakes for both passenger and freight trains are essential and must be effected.

"Following the issuance of that report the American Railway Association, with the cooperation and assistance of the Bureau of Safety, revised its rules which had been adopted as standard in 1923. The purpose of this revision was to bring about improvements . . . These revised rules were approved by the Commission and adopted as standard by the American Railway Association in 1925; when issued, the following statement was made: . . . "These rules represent minimum requirements, and shall govern the maintenance of air brake and air brake signal equipment on locomotives and cars, . . . They marked a distinct advance in safety requirements as compared with the rules of 1923 which they superseded . . ."

The responsibility for the collision is placed, as before stated, not only upon Engineman Lyons and Conductor Allen but also upon the entire staff of division operating officers; and the management is called upon promptly to give consideration to the matter of revising the rules and the practice.

ONE HUNDRED AND TWENTY MILES AN HOUR is the speed claimed for the "railplane" in newspaper dispatches from London. The new device, the invention of George Bennie of Glasgow, consists of a cigar-shaped car driven by airplane propellers at each end, equipped to carry fifty passengers and some light freight and designed to travel on an overhead monorail. Experiments are being conducted on an overhead rail constructed over the London & North Eastern tracks at Milngavie, Scotland, with a car which has been built by the William Beardmore Company, Ltd.

Pullman Service Result of Twenty-Two Years' Development*

Sleeping car tickets, including surcharge, said to be only 28 per cent of railroad fares

By James Keeley

Assistant to President, Pullman Company

THE Pullman system is based on three fundamental proposals: One, to provide for all the railroads, passenger train equipment representing the last word in comfort, convenience, luxury and safety; two, to operate this equipment everywhere, the same car passing without interruption over the lines of as many railroads as may be required to complete its trip; three, to provide, for this continent-wide passenger service, an equipment pool, so that the peaks and depressions, seasonal and regional, in travel may all be met without maintaining an uneconomically large number of cars.

A word about these travel peaks. In the winter there is an enormous movement to California and the south. Trains go west and south overflowing with passengers, but must be rushed back practically empty. In the summer the movements to New England and to the lake and mountain resort areas, present similar difficulties. If railroads provided their own equipment, each would have a large share of it idle much of the year. Each road would have to keep its equipment on its own lines; a much greater investment would be necessary, and the through routing of cars over two or more railroads would be impracticable.

The Pullman system, as an equipment pool, is both a vast economy and a huge national convenience. Travelers are often surprised to learn that only about 9,000 Pullman cars are required under this plan of intensive service to supply the country. Under centralized management, the utmost of mileage and service is obtained from every car through the entire year.

The American traveler thus enjoys the utmost of luxury and satisfaction at very low cost. In the last 50 years rates for lower berths have remained practically unchanged while those for uppers have been reduced.

European Rates Higher Than Those in U. S.

Take another view. Europe with four times our population, uses only about one-fourth as many sleeping cars. Why? It has been calculated that first class sleeping car tickets in Europe cost 63 per cent as much as first class railroad tickets for given journeys, whereas in the United States first class sleeping car tickets, including surcharge cost only 28 per cent as much as railroad tickets. Moreover, second class sleeping car tickets in Europe cost about 70 per cent as much as second class railroad tickets, whereas in the United States tourist sleeping car tickets cost only about 15 per cent as much as the railroad fare.

"Historic No. 9," the first Pullman car of 1859, was

44 ft. long. The present standard car is 83 ft. 11 in. That first car was made of wood, its present-day successors are all-steel. At first there were no springs, although thin blocks of rubber were presumed to give a certain resilience. The first car was heated by a box stove, wood-burning, at either end. Since then heating has passed through the stages of hot air furnaces; the Baker heater, consisting of stove and boiler from which hot water was piped; then steam under boiler pressure from the locomotive and finally, the present vacuum system, using steam at atmospheric pressure, which avoids danger of scalding if pipes break in accident. Car lighting has gone through a like evolution; candles, kerosene lamps, ordinary illuminating gas, Pintsch gas and electricity.

Safety Devices

The most effective of all safety measures is the steel car. In the old days of stoves and wooden cars, holocaust often was the inevitable climax of a serious accident. Now, steel construction, safety devices, and the elimination of fire hazard have won for the Pullman ticket the repute of a traveler's life insurance policy. But to build steel cars meant a revolution in the industry.

The great Pullman car plant must be converted from a wood-working to an iron-fabricating establishment, all at once. The first experimental car was built by hand, with cold chisel, hack saw and lurid language. The car was finished in March, 1907, and made an exhibition tour of the country. Its success being established, preparation for mass production proceeded with all possible rapidity.

Ventilation Better Than in Most Public Places

The problems of heating and ventilating cars are closely related. To satisfy the passenger who wants a temperature of 65 deg., and also the one who feels chilly under 75 deg., is some problem. The truth is that more fresh air is admitted, per capita, to passengers on a Pullman car than to most places where groups of people gather—street cars, stores, restaurants, office buildings. This is not guess-work, for Pullman people know. They know, because their experts have measured air currents and sampled air for purity, in over 5,000 cases and under all circumstances. The 13 ventilators in the top of each standard Pullman will each discharge from the running car, 10,000 to 14,000 cu. ft. of air per hour. A comparison of Pullman statistics with those from other authenticated sources shows that the street car rider gets 540 ft. of fresh air per hour, a store patron 1,250, and an office habitue 670, and a restaurant patron 500, while a Pullman passen-

* An address before the Chicago Association of Commerce on November 6.

ger could expect 2,035 in his berth and 3,160 in the body of the car.

Keeping cars clean is an important factor in travel hygiene. In early days cars were cleaned by hand; later, the vacuum cleaner was adopted. The cleaners scrub interiors and exteriors, polish windows and metal-work and renovate blankets and mattresses. At the same time mechanical or electrical defects are remedied; all this at the end of every trip. This work employs over 6,000 people in 235 railroad yards all over the country.

With about 35,000,000 guests a year, the Pullman organization is by a long ways the greatest hotel keeper in the world. We have on hand between 8,000,000 and 9,000,000 articles of household supplies. Last year we made the following among other replenishment purchases, representing an average year's supply:

Towels	1,165,141
Pillow slips	444,663
Sheets	387,049
Head rest covers	100,960
Tidy slips for parlor cars	76,758
Porters' jackets	63,150
Blankets	23,491
Pillows	18,742
Mattresses	7,893

Among the incidental yearly purchases I might mention:

Paper bags for women's hats	5,786,239
Boxes of safety matches	3,500,000
Cakes of soap	3,500,000
Gallons of liquid soap	125,000

Storage warehouses at all railway centers maintain supplies of more than 9,600 different articles, subject to instant requisition.

The scale of Pullman housekeeping will be suggested by mentioning the equipment of certain essentials required for a single car and trip. Thus a standard sleeper of 12 sections and drawing room, starting from Chicago for the Pacific coast, must carry, among other supplies, these supplies being replenished as needed from depots enroute:

Sheets	250
Pillow slips	200
Blankets	56
Hand towels	400

Contrast this practically unlimited supply of towels with the European practice, where on the continent one towel a day is allotted to each passenger and if you are slothful you sometimes find that your fellow passenger, or a passenger in the next room which uses the community washroom, has grabbed that.

Every Day is House Cleaning Day

In Pullman operations every day is house cleaning day, every day is wash day. Consider what the laundry operations for about 35,000,000 sleeping guests per annum involve. If a year's Pullman linen were all to come out of the wash at once, there would be 278,705,685 pieces. If that annual wash were hung on a straight line diagonally across the North American continent, you would have to stretch 20 clothes lines from Key West to Nome to accommodate it. It takes 65 laundries to do the Pullman wash. Seven of the laundries are huge establishments owned and operated by the company, the others work under contract. The laundry bill in a single year was \$3,314,701.13.

Last year's Pullman guests, just under 100,000 a day, equalled near a third of the country's population. They traveled a grand total of 13,600,000,000 miles, or an average of 400 miles per passenger. Almost exactly half of the mileage ridden by railroad travelers in this country was covered in Pullman cars; and the proportion which Pullman travel bears to all railroad travel grows steadily larger year by year. There are 4,200 offices in the United States, Canada and Mexico in which one

can arrange reservations between railroad stations anywhere on the continent.

Aside from the great works in Chicago, the Pullman system maintains shops at a number of strategic railroad centers. The most recent return covering the Company's employees totaled 31,147; 12,222 porters, waiters and cooks; 2,819 conductors; 316 maids; 237 club car attendants; 670 storeroom laborers; the rest being employees of shops, executive, clerical and other workers. The labor turnover is low, a recent analysis showing that 17 per cent of the porters have been in service over 15 years; 28 per cent from 5 to 15 years; 30 per cent from 2 to 5 years; of the remainder, a considerable portion were students, temporarily employed in vacation time.

Accidents Investigated During April

OF the train accidents happening in the month of April, 1929, the Bureau of Safety, Interstate Commerce Commission, investigated six, and published reports of the investigations; abstracts of these reports are given below. Four of these accidents were collisions; one was a case of a freight train running into a track car with disastrous results, and one was that of a passenger train striking an automobile truck on a highway crossing with fatal consequences.

Texas & Pacific, Denton, Texas, April 3, 9:30 p. m.—Southbound freight train No. 373, second section, consisting of 85 cars and a caboose, hauled by engine 907, moving at about 15 or 20 miles an hour, ran into the side of a switching freight which was backing from the main track into a side track, and the engineman of the latter train was killed; the sudden stoppage of the long freight train resulted in the derailment of the twenty-first car in the train, which, with four others, was tumbled over to one side and fell on a automobile parked near the passenger station killing one of its occupants and injuring another. The cause was the failure of the engineman of No. 373 to run under proper control within yard limits. Besides Rule 93, requiring restricted speed, there had been a bulletin issued calling attention to the fact that at Denton it was particularly necessary to run through the yard at very low speed. The conclusion of the report is that the engineman and fireman might have seen the switching train much sooner if they had been alert. A brakeman of the switching train who tried to stop the freight, was unable to do so, one of the reasons being that his lantern became extinguished.

Chicago, Rock Island & Pacific, Argon, Iowa, April 4, 7:17 a. m.—A motor car, weighing 950 lbs. and carrying a track foreman and three laborers, moving westward at about 5 to 8 miles an hour, in a dense fog, was run into by eastbound freight train No. 914, moving at 20 miles an hour or faster, and two of the employees were killed; the foreman and one laborer were injured. The track foreman, who is held responsible, had received from the train dispatcher, through the station operator at Iowa Falls, a statement to the effect that freight train No. 914 was expected to arrive at that point at 7:50 a. m. and the foreman calculated that he could reach the next side track before the

freight should arrive, but the fog was so dense that there was little chance that he would have time to lift the motor car from the track when the approaching train became visible. The rule governing the operation of motor cars warns foremen that getting information about expected trains does not excuse any neglect to protect the car.

New York Central, Stanley, Ohio, April 6, 4:17 a.m.—New York Central freight train No. 95, a very long train, entering the yard, was run into at the side by a switching train of the Michigan Central, and a car inspector was killed. The Michigan Central engine was pushing about 60 cars slowly northward and the collision was due to carelessness or inefficiency in giving hand signals by the man on or near the leading car of the string. This man claims to have given numerous stop signals, but to the inspector it does not seem reasonable that all of these signals, which he says were given, could have been missed by the brakeman near the locomotive. In this case, as in that at Denton, Texas, on April 3, a brakeman's hand signals were impaired or nullified by his lantern going out.

Missouri Pacific, Kenova, Ark., April 10.—A northbound freight train, moving at considerable speed, collided with locomotive No. 78, which was pushing a string of cars slowly northward; and No. 78 was badly damaged and cars in both trains were smashed. One trespasser was killed and one brakeman was injured. The engineman of the freight train is held responsible for not having properly controlled his speed within yard limits.

Buffalo, Rochester & Pittsburgh, West Falls, N. Y., April 22.—Southbound freight train No. 43, moving at from 20 to 25 miles an hour, collided with a work train, moving north at very low speed, and nine employees were injured, one of them fatally. The southbound train had been properly notified by a flagman to run under control expecting to find the work train, and it also ran past an automatic absolute block signal indicating stop. The engineman and fireman claimed that this signal indicated proceed but the inspector does not accept their statement. The investigation disclosed that Rule 100-B, requiring work trains, in a situation like this, to send out a second flagman, had been habitually ignored; and the road is called upon to see that this improper practice does not continue.

St. Louis-San Francisco, Spaulding, Okla., April 29, 2:53 p.m.—Northbound passenger train No. 510, moving at from 15 to 25 miles an hour, struck an automobile truck on a highway crossing, the truck being in motion at about 15 miles an hour; and the driver of the truck was killed and six persons were injured. Gasoline on the truck set fire to the locomotive and to the two steel coaches of the train (but the report does not say how much damage was done by the fire). Neither locomotive nor cars ran off the track. The inspector finds that the driver of the truck passed on to the crossing directly in front of the train, and he holds that the evidence indicates that no stop had been made at the regular highway stop sign, though such stop is required by the law of the state of Oklahoma. The view approaching the railroad is somewhat obstructed, but it is held that had the driver stopped and taken the proper precautions, he could have heard and seen the approaching train in ample time to have avoided being struck.

Looking Backward

Fifty Years Ago

Statistics from the treasury department show that the average cost per ton of transportation on ten of the principal lines of the country fell from 2.3 cents per mile in 1868 to 0.95 cents per mile in 1878.—*Railway Age*, December 18, 1879.

A more northerly railway than even the Canadian Pacific is projected for British America, a line from Lake Winnipeg northeasterly to Hudson's Bay at Fort Nelson [the approximate route of the present Hudson Bay Railway], a distance of some 300 miles. The proposed object is to furnish a route for the grain of Manitoba to the waters of Hudson's Bay, whence it would be conveyed by water direct to Great Britain.—*Railway Age*, December 18, 1879.

The New York & Oswego Midland [now the New York, Ontario & Western] was sold in Middletown, N. Y., on November 4 under a decree of foreclosure granted three years ago. Several bidders were present and the price went up to \$4,600,000 for the 344 mile line, at which it was knocked down to the purchasing committee representing the holders of receivers' certificates and first mortgage bonds.—*Railroad Gazette*, December 19, 1879.

Twenty-Five Years Ago

The Terminal Railroad Association of St. Louis has issued a statement which shows that 10,000,000 persons were handled at the Union station in that city during the seven months of the Louisiana Purchase Exposition in 91,560 trains made up of a total of 457,688 cars.—*Railway Age*, December 23, 1904.

G. E. Evans, general manager of the Louisville & Nashville, has been elected fourth vice-president, a newly created position. C. H. Morrison, signal engineer of the Erie division of the Erie, has been promoted to signal engineer of the entire system, with headquarters at Jersey City, N. J.—*Railroad Gazette*, December 23, 1904.

J. W. Higgins, assistant superintendent of the Grand Trunk at London, Ont., has been appointed inspector of transportation of the Missouri Pacific at St. Louis, Mo. On January 1, Charles S. Fay, general freight agent of the Southern Pacific lines in Louisiana, will assume the duties of traffic manager of those lines, with headquarters at New Orleans, La.—*Railway Age*, December 23, 1904.

Ten Years Ago

Debate on the Cummins railroad bill was resumed in the Senate on December 15 with a plan for holding night sessions in an effort to expedite its passage during the week and under a notice served by Republican leaders that unless a vote is taken on the bill during the week it will be necessary to postpone the holiday recess proposed to begin on December 20. An unexpected amount of opposition to the bill has developed and a large number of amendments touching almost every phase of its text have been submitted.—*Railway Age*, December 19, 1919.

The principle of time and one-half for overtime in road freight service, which was demanded by the brotherhoods in 1916, waived in the negotiations preceding the passage of the Adamson eight-hour law and since reiterated in connection with the demands made by the brotherhoods upon the Railroad Administrations, has finally been conceded by that body with some modifications and offsets, by way of concessions on the part of the employees, and became effective as to slow freight service on December 1. It was stated that the rule would add about \$36,000,000 per year to the payroll unless it were possible to reduce the amount of overtime.—*Railway Age*, December 19, 1919.

Communications and Books

High Service Standards for Handling Holiday Passengers

ELLWOOD CITY, PA.

TO THE EDITOR:

Most lines of business make particular efforts to please the customer who gives a "trial order." The railroads take care to do this in regard to freight traffic. Why is it not done with passenger traffic?

Thousands of people who drive their automobiles nine months a year ride the trains during the Christmas season. It is practically their only contact with railroad passenger service. Why is it that in a great many instances the worst service of the year is given at this time?

Many excuses can be put forth,—heavy travel, extra cars, loading and unloading mail and express, cold weather, etc. Yet in spite of all this the crack flyers are usually put through on time, while the rest of the trains are left to stagger along as best they can under severe handicaps.

Why is this? Simply because the average railroad will spend a few extra dollars to get the crack train through on time, while they count the pennies when it comes to additional expense in connection with lesser trains. Most lines merely add extra cars when they really need extra sections. During times of heavy travel many trains could be split into two or more sections and still have a much greater revenue per dollar of expense than the average.

Other businesses would welcome such an opportunity as this to demonstrate the superior service they are capable of giving. Is there any good reason why the railroads should not take advantage of the opportunity? In most cases the unit cost per passenger would be even lower than the average. And, as conclusive evidence of the superior reliability of railroad passenger service, the advertising should be of inestimable value at a time such as this when passenger traffic is on the decline.

FREDERIC M. SMITH.

New Book

China, A New Aspect, by H. Stringer. Illustrated with map. 240 pages, 8½ in. by 5½ in. Bound in cloth. Published by H. F. & G. Witherby, London. Price 12 shillings, 6 pence.

Because "the views of those who are detached from treaty port life, and are beyond the range of official influence, have not yet been presented" the author, formerly in Chinese railway service, attempts herein a critical appraisal of railway developmental policies thus far pursued by exploiters of this great Far East raw materials storehouse. He considers in turn the diplomatic manoeuvres of the several countries whose nationals have attempted railway projects in China and how these attempts have failed to erect a suitable transportation system for the development of the nation along sound economic lines.

His thought on a curative, as expressed in the preface, is that "Regeneration must be in the Western assistance of a Chinese dictator, if not in foreign intervention for a time. Renaissance must also be in the provision of better communications and in the rehabilitation of the wrecked railway system." Later, along this same line, it is held that the merchant class in China "know that Red or Militarist government, or lack of government, is bringing China to the brink of ruin, that their trade is strangled by its methods, yet they silently suffer it. They lack the organization, the far-sightedness even, to select a man and back him with money to hoist him into the dictatorship, which they know to be necessary for the country's salvation."

But most interesting to the American reader will perhaps be the author's discussion of "America in China." Here it is contended that the history of American effort in engineering in China is that of the Canton-Hankow Railway. "This achievement apart", the discussion continues, "America has been prominent in the preliminary investigations for abortive or sus-

pended schemes America has actually, within the years 1899 to 1904, completed thirty miles of railway in the neighborhood of Canton, and a small colliery-line, seventy miles in length, in the province of Hunan. She has never operated a single mile of track. Yet her representatives on expert commissions presume to lecture the much tried foreign railway official on the economics of construction and operation America's achievements in the railway sphere have been mainly in the direction of unwanted and unwarranted criticism—criticism which refuses to recognize the difficulties of the foreign railway employee in China. Unfortunately, in China words carry almost the weight of the deed."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Commerce Yearbook 1929, Vol. II—Foreign Countries, compiled by U. S. Department of Commerce. "Comparative world statistics—Railways—Operating Statistics" p. 736-738. 783 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. \$1.

The Dairen Library. A classified list of books and periodicals recently added to the South Manchuria Railway Company's Library at Dairen. The section on railways includes publications of the American Railway Association, periodical articles indexed in the *Railway Age* and other railway and economic periodicals, and other material not so familiar to American railroaders. List No. 6756. Pub. by South Manchuria Railway Co., Dairen, Manchuria.

Methods of Compiling Statistics of Railway Accidents, compiled by International Labor Office. Its studies and reports, series N (Statistics) No. 15. A survey of railway accident statistics in various countries preceded by a discussion of railway risk and industrial risk. 82 p. Pub. by International Labor Office, Geneva, Switzerland. Available in the United States from World Peace Foundation, Boston, Mass. 50 cents.

The United States Railroad Labor Board and Railway Labor Disputes, by Frank Bird Ward. Discusses the establishment and organization of the Labor Board, principles underlying the decisions of the Board, powers of the Board as defined by the courts, and new legislation. A thesis at the University of Pennsylvania. 93 p. Publisher not given but probably available from Author, Philadelphia, Penna.

Periodical Articles

The Locomotives of the Louisville and Nashville Railroad, Part II, by Paul T. Warner. Describes present-day conditions and motive-power, but also contains a picture of the old Green River Bridge, Kentucky, a Fink truss built 1857-59 (p. 8). Illustrated. *Baldwin Locomotives*, January 1930, p. 2-22.

The Shaggy Legion, by Hal G. Evarts. Includes a description of the famous buffalo hunting contest, William Cody for the Kansas Pacific Railroad vs. William Constock. The main prize was the title "Buffalo Bill" and the Kansas Pacific ran excursions from St. Louis. *Saturday Evening Post*, December 14, 1929, p. 26-27, 80-89.

A Southern Cottage, by Majorie Potwin. Economy note in home-building, for the owner found that for ceiling beams and door lintels and mantel "ordinary sawed railroad ties would answer, eight foot lengths for use in the doorways, and by reason of the width of the living room, 'switch ties', twice eight feet in length for the beams overhead and the mantel!" p. 361. Photograph on same page. *American Home*, January 1930, p. 360-361, 382.

Track Hand to President, by Virginia F. Cullen. Biographical sketch of J. J. Pelley, President of the New York, New Haven & Hartford Railroad. *Railroad Man's Magazine*, December 1929 (Vol. 1, No. 1 of the new series), p. 1-13.

Odds and Ends of Railroading

A Perfect Record

F. F. Starr, engineman on the Central of Georgia, has the unique record of having driven a locomotive for 44 years without receiving a single demerit mark on the score of efficiency. It is believed that he holds the record for long-service perfection in railroad work.

What's In a Name?

Tenino, Wash., is not an Indian name, as most people who have heard of it suppose. This station on the Northern Pacific, south of Olympia, Wash., got its name during the construction days of the Northern Pacific. It was a temporary railhead, and was named in honor of the first locomotive to reach there, the 1090, pronounced ten-nine-o.

Agent for Half a Century

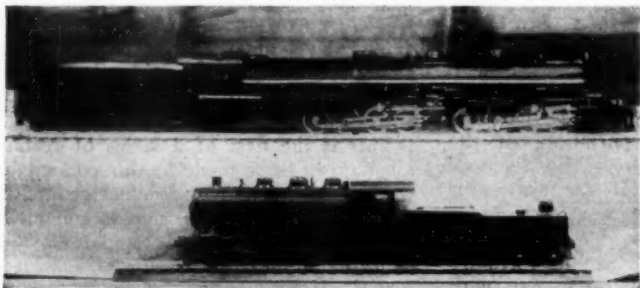
There are a number of men who have been station agents for long periods, but the record of Edward Dobbins is probably unique, in that he has put in a half century of service with the Illinois Central as agent-operator in the same place. He became agent and operator at Del Rey, Ill., on November 1, 1879, and November 1, 1929, found him still at the old stand, where he expects to continue for a good many more years.

Pullman Dishes

Writers will go to any extreme to secure technical accuracy on almost any subject but railroading. That is the one field on which the fictioneers seem to feel themselves qualified to write with authority, probably because they once rode on a train. The current case which calls forth these comments is that of Howard Brubaker, in a recent issue of Scribner's, in a story entitled "The Professor Looks at Barbara." In his yarn he has one of his characters go into the diner of a train and "break a lot of the dishes belonging to the Pullman Company."

A Model Builder

Paul Cheske of Chicago builds dozens of models, the largest and smallest in his collection being shown in the photograph. He



Some of Cheske's Models

states that he builds his model displays entirely from measurements and scenery obtained from reading the *Railway Age*.

Alarming Statistics

The New York Central's fleet of nine daily 24-hour trains between New York and Chicago seemed all right until we looked into it and found that five of the trains are from Chicago and four from New York. This city is one train shy of breaking even. We did a little figuring and the results are alarming. Eleven Pullmans is about a trainload and there are 24 berths in a Pullman, not counting the drawing-rooms either. If all the berths on the trains from Chicago are full (and that's being pessimistic, it's just facing facts) it means 11 times 12 times 2, or 264 more people arriving from Chicago than leave for it. Things mount up. It gives New

York an import surplus of 96,300 Chicagoans a year—all because one railroad didn't think its job through. It means more fish for the Aquarium, perhaps an addition to it, and a new subway, just when we're getting half settled. We call upon the Pennsylvania to start a fleet of 10 trains, nine to Chicago and one back. They can return the Pullmans in ballast. At that rate we would export 750,000 of our own inhabitants a year. Then we'd be getting some place. You'd notice the difference in street traffic in less than a month.—The New Yorker.

Why Build a Transcontinental Railroad

John Plumbe, one of the first advocates for building a transcontinental railway, said, in about 1840:

"Such a railway will enable the eastern states to obtain tea of a better quality by getting it more quickly to the consumer, and will make it possible for San Francisco to play checkers with New York by telegraph."

Surely rather peculiar reasons for building a transcontinental railway. Some of Plumbe's other ideas were not so far fetched. He pointed out that:

"The railroad will facilitate the protection of the whites from the Indians. Our present attempts to Christianize the heathen are but a drop in the ocean compared with the effects which would follow the construction of the road."

Another enthusiast, Dr. Carver, spent a great deal of time trying to finance such an undertaking. He said that the enterprise would "bring about a kind of earthly millenium and be the means of uniting the whole world in one great church, a part of whose worship will be to praise God and bless the Oregon Railroad." He proposed to take care of financing his road by going to China, which "seemed to be waking up" and endeavoring to inspire the people there "with a spirit of activity and enterprise that will induce them to take large amounts of stock." His plan for overcoming the mountain grades was to have holes drilled in the rails to receive the cogs of wheels "which can be so arranged as to be let down when it became necessary to ascend a grade of over 100 ft. to the mile."

A Real Veteran

When Z. G. Hopkins, assistant to the president of the Missouri-Kansas-Texas, spoke of "a veteran of 57 years service and still going strong", at the annual Veterans' Banquet of the railroad at Parsons, Kans., the several hundred veterans there assembled pricked up their ears. For George B. Lorraine, Durant, Okla., general clerk, who had served 54 years, was commonly supposed to be the oldest among them in point of service.

But Mr. Hopkins produced a gavel, made from a railroad tie laid south of Eufaula, Okla., when the Katy main line was first built through the old Indian Territory in 1872. That railroad tie was the veteran referred to. The gavel was duly presented to W. E. Williams, manager of the department of personnel, himself a veteran, in the presence of President C. Haile, who had served the railroad for 40 years.

A number of those ties had been placed there when the Katy, which was the first road to build into Texas from the north, was pioneering through the Indian Territory. Some of them still remain, in spite of the fact that trains on the main line have been pounding over them for 57 years. They are made of Bois D'Arc Osage orange, the common thorn hedge of that country, which is one of the strongest and toughest of woods, as any farmer who has tried to grub it out knows. Although the surfaces are exposed, the ties show no evidence of decay. They have outlasted the original 56-lb. iron rail, and the steel rails of 52-lb., 63-lb., and 66-lb. which followed, and now give satisfactory service under 85 and 90-lb. steel rail.

As a symbol of the faithful and true service, the tie from which the gavel was made was declared a member of the veterans' association.

NEWS of the WEEK



Three Sections of the Atlantic Coast Line, "The Minuteman" Leaving Grand Street Station, Richmond, Va.

COMMISSIONER FRANK McMANAMY has been elected Chairman of the Interstate Commerce Commission for the ensuing year, succeeding E. I. Lewis.

THE CLEVELAND (OHIO) RAILWAY CLUB will hold its next meeting at the Hotel Hollenden on January 6. The discussion will be on the interchange rules for 1930.

THE NEW ENGLAND RAILROAD CLUB will hold its next meeting on January 14 at the Copley-Plaza Hotel, Boston. Co-ordination of rail and air service will be discussed by William P. MacCracken, Jr.

THE CANADIAN RAILWAY CLUB will hold its next meeting on January 13 at the Windsor Hotel, Montreal. G. F. Meighan, general manager of Ringling Brothers, will speak on circus organization and operation.

THE CAR FOREMEN'S ASSOCIATION OF ST. LOUIS will hold its next meeting on Tuesday evening, January 8, at American Hotel Annex, St. Louis. P. A. Lovely, of the Pullman Company, will speak on safety first. Motion pictures will be shown.

THE NEW YORK RAILROAD CLUB will hold its next meeting on January 17 in conjunction with the American Society of Mechanical Engineers (Metropolitan Section) and the Manhattan Airbrake Club. S. G. Down, vice-president of the Westinghouse Airbrake Company, will speak on airbrakes.

CLERKS ON THE NASHVILLE, CHATTANOOGA & ST. LOUIS have been awarded an increase of three per cent in their wages by a federal arbitration board. The increase, which is retroactive to April 1, 1929, involves an addition of \$45,000 to the yearly payroll of the railroad and establishes minimum and maximum rates of \$60 and \$91.50 a month respectively.

THE REAPPOINTMENT of Commissioner Joseph B. Eastman as a member of the Interstate Commerce Commission has been unanimously confirmed by the Senate, but some opposition to the appointment of Judge Robert M. Jones developed

among senators who had expected a Democrat to be nominated, and his name has been referred back to committee for investigation.

TOM VERNON, who was suspected of wrecking the Southern Pacific West Coast Limited near Saugus, Cal., on November 10 and who was taken to Los Angeles on December 10 for trial, was sentenced to life imprisonment on December 18. The former railroad fireman confessed that he wrecked the train for revenge following the company's refusal to employ him because of a prison record.

Taxes to Be Reduced

Railways, as well as other corporations, will benefit by the one per cent reduction in the corporate income tax-rate for 1929 provided in the bill signed by the President on December 16. The rate is reduced from 12 to 11 per cent. In 1928 the federal taxes paid by the Class I railways amounted to \$89,277,354.

"Everybody Home for Christmas"

The foregoing is the gist of an order which has been issued by J. R. Downes, chief of freight transportation, of the Pennsylvania Railroad, for the guidance of officers in charge of the movement of freight trains throughout the Pennsylvania system. In order to give as many men as possible an opportunity to be at home on Christmas day with their families, the movement of all freight, except live stock and perishables, is to be suspended, as far as practicable, from 3 p. m. on the 24th until 7 a. m. on the 26th.

Full Crew Laws

The Atchison, Topeka & Santa Fe, the Chicago, Rock Island & Pacific, the Missouri Pacific and the St. Louis Southwestern have been ordered by the Railroad Commission of Texas to comply with the provisions of the state full-crew law in the operation of rail motor passenger cars. The order followed an opinion by the state attorney general's department which held that the law which requires a crew of four on each train

is applicable to rail motor cars. The Ohio state supreme court on December 11 upheld an order of the Public Utilities Commission of that state which required the New York Central to employ a full crew on a locomotive crane which was performing switching service at Thurston, Ohio.

A Call for Better View at Crossings

The Committee on Protection of Railway Grade Crossings and Highway Intersections of the National Conference on Street and Highway Safety, which held a meeting in Washington on December 11, adopted a resolution urging that advantage be taken of all favorable weather during the winter to keep road gangs at work, or even to increase them, for such work as the removal of obstructions of view at highway crossings of railroads. The committee agreed that obstructions of view due to high banks, growths of brush and other obstructions are an important contributing cause of automobile accidents and it was recommended that this suggestion be brought to the attention of the appropriate state and local authorities.

This is the first of a series of recommendations to be made by this committee, whose study embraces accident reduction, physical hazards, signs, signals and other protective devices, laws, regulations and educational measures.

Taplins Lose Suit to Restrain Use of Cleveland Property

The Pittsburgh & West Virginia, in the federal court at Cleveland, Ohio, on December 12 was denied an injunction which would have restrained the completion of a contract for the transfer of the Wheeling & Lake Erie's Ontario street station site in Cleveland to the Cleveland Union Terminals Company. The suit was brought by the Pittsburgh & West Virginia, which is an owner of Wheeling & Lake Erie stock, as an appeal from the Interstate Commerce Commission decision approving the leasing of the station site and the use of the Union terminal by the W. & L. E. The hearing on a second suit, which attacks the pro-

posed lease on the ground that the Wheeling has no corporate authority to take such action, has been postponed until January. This suit was brought by John J. Atwater as a stockholder of the Wheeling and represents another step in the efforts of Frank E. and C. F. Taplin of the P. & W. V. to prevent the use of the station site by the Van Sweringen interests.

O'Fallon Case Re-Opened for Further Argument

The Interstate Commerce Commission has ordered a reopening for further argument before the commission at Washington on January 23, of the proceeding involving the ascertainment of the valuation for recapture purposes of the St. Louis & O'Fallon and Manufacturers' railways.

Although nothing was said about the purpose in the notice it is understood that an opportunity will thus be afforded the various parties to the case to present their arguments as to the methods which should be followed by the commission to make its valuation conform to the principles referred to by the Supreme Court of the United States in the decision in which it held that the commission had not given

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 180 Steam Railways, Including 16 Switching and Terminal Companies

FOR THE MONTH OF OCTOBER, 1929 AND 1928

Item	United States		Eastern District		Southern District		Western District	
	1929	1928	1929	1928	1929	1928	1929	1928
Average number of miles operated	241,777.55	241,403.30	60,111.24	60,101.03	45,763.57	45,732.77	135,902.74	135,569.50
Revenues:								
Freight	\$483,037,628	\$493,063,801	\$203,192,282	\$203,048,148	\$79,809,736	\$80,443,057	\$200,035,610	\$209,572,596
Passenger	66,118,219	69,084,772	36,446,296	37,435,182	8,266,712	9,513,878	21,365,211	22,740,732
Mail	12,236,771	9,531,059	5,699,320	3,838,531	1,774,537	1,581,426	4,762,914	4,111,102
Express	15,229,405	14,061,216	7,761,500	6,478,202	1,992,415	1,901,623	5,475,490	5,681,391
All other transportat'n	18,441,840	19,229,892	10,789,874	10,954,772	1,309,504	1,316,402	6,342,462	6,958,718
Incidental	12,602,013	12,367,664	6,344,798	6,256,569	1,388,800	1,325,847	4,868,415	4,785,248
Joint facility—Cr.	1,306,227	1,128,228	402,375	419,910	223,967	165,910	679,885	542,408
Joint facility—Dr.	310,773	320,714	81,731	79,226	37,133	37,064	191,909	204,424
Railway operating revenues	608,661,330	618,750,938	270,594,714	268,352,088	94,728,538	96,211,079	243,338,078	254,187,771
Expenses:								
Maintenance of way and structures	79,205,309	78,817,298	34,090,634	33,367,105	13,428,261	12,803,944	31,686,414	32,646,249
Maintenance of equipment	106,537,221	103,194,118	51,246,280	48,823,347	18,546,602	17,634,422	36,744,339	36,736,349
Traffic	11,038,105	10,396,411	4,319,883	3,838,214	1,971,377	1,996,022	4,746,845	4,562,175
Transportation	187,550,739	189,892,118	89,119,050	87,974,723	28,310,709	28,556,595	70,120,980	73,360,800
Miscellaneous operat'ns	4,943,104	4,835,846	2,327,122	2,227,961	479,913	524,146	2,136,069	2,083,739
General	16,553,071	16,326,772	7,210,112	7,059,342	2,771,163	2,721,465	6,571,796	6,545,965
Transportation for investment—Cr.	1,500,560	1,301,131	422,882	351,217	124,986	86,135	952,692	863,779
Railway operating expenses	404,326,989	402,161,432	187,890,199	182,939,475	65,383,039	64,150,459	151,053,751	155,071,498
Net revenue from railway operations	204,334,341	216,589,506	82,704,515	85,412,613	29,345,499	32,060,620	92,284,327	99,116,273
Railway tax accruals	39,951,566	39,668,023	16,835,081	16,330,410	6,882,754	6,470,905	16,233,731	16,866,708
Uncollectible ry. revs.	96,921	102,446	40,101	31,572	15,607	22,720	41,213	48,154
Railway operating income	164,285,854	176,819,037	65,829,333	69,050,631	22,447,138	25,566,995	76,009,383	82,201,411
Equipment rents—Dr. balance	9,177,821	8,952,144	3,801,126	3,783,139	d 682,581	d 735,427	6,059,276	5,904,432
Joint facility rent—Dr. balance	2,120,906	2,243,612	1,060,305	1,185,667	164,259	217,577	896,342	840,368
Net railway operating income	152,987,127	165,623,281	60,967,902	64,081,825	22,965,460	26,084,845	69,053,765	75,456,611
Ratio of expenses to revenues (per cent) ..	66.43	65.00	69.44	68.17	69.02	66.68	62.08	61.01

FOR TEN MONTHS ENDING WITH OCTOBER, 1929 AND 1928

Average number of miles operated	241,567.30	241,038.71	60,125.83	60,095.24	45,760.56	45,712.39	135,680.91	135,231.08
Revenues:								
Freight	\$4,100,503,813	\$3,914,276,638	\$1,785,881,705	\$1,679,564,373	\$718,377,831	\$692,478,222	\$1,596,244,277	\$1,542,234,043
Passenger	736,665,986	760,195,241	393,618,863	399,987,086	99,894,147	109,313,033	243,152,976	250,895,122
Mail	122,982,756	82,855,973	49,168,839	31,896,918	19,149,728	14,250,743	54,664,189	36,708,312
Express	123,646,966	115,847,904	57,835,925	53,269,290	18,589,767	17,062,556	47,221,274	45,516,058
All other transportat'n	178,124,059	174,230,447	103,465,326	98,655,469	12,300,098	12,099,497	62,358,635	63,475,481
Incidental	113,776,457	105,607,559	57,441,228	52,689,991	13,557,100	13,711,104	42,778,129	39,206,464
Joint facility—Cr.	11,314,415	11,123,579	3,720,087	4,236,021	1,823,256	1,611,339	5,771,072	5,276,219
Joint facility—Dr.	3,240,157	3,511,165	815,727	1,110,586	353,904	362,040	2,070,526	2,038,539
Railway operating revenues	5,383,774,295	5,160,626,176	2,450,316,246	2,319,188,562	883,338,023	860,164,454	2,050,120,026	1,981,273,160
Expenses:								
Maintenance of way and structures	734,704,749	717,853,902	307,761,125	297,809,915	126,848,956	123,713,813	300,094,668	296,330,174
Maintenance of equipment	1,013,584,946	981,437,956	483,117,306	458,198,879	176,866,122	173,919,366	353,601,518	349,319,711
Traffic	108,452,470	104,561,927	41,400,867	38,972,494	19,687,069	20,054,106	47,364,534	45,535,327
Transportation	1,761,669,666	1,748,783,575	834,825,507	818,366,680	274,785,273	279,603,668	652,058,886	650,813,227
Miscellaneous operat'ns	49,559,849	47,228,163	22,712,760	21,842,991	5,430,559	5,746,373	21,416,530	19,638,799
General	162,110,601	161,582,040	70,710,828	72,023,989	27,313,063	26,972,462	64,086,710	62,585,589
Transportation for investment—Cr.	11,379,641	12,868,439	2,759,025	2,314,524	918,938	1,053,938	7,701,678	9,499,977
Railway operating expenses	3,818,702,640	3,748,579,124	1,757,769,368	1,704,900,424	630,012,104	628,955,850	1,430,921,168	1,414,722,850
Net revenue from railway operations	1,565,071,655	1,412,047,052	692,546,878	614,288,138	253,325,919	231,208,604	619,198,858	566,550,310
Railway tax accruals	350,492,437	326,365,689	149,245,515	137,667,926	62,312,430	58,525,705	138,934,492	130,172,058
Uncollectible ry. revs.	954,653	1,062,234	386,758	507,787	218,817	193,251	349,078	361,196
Railway operating income	1,213,624,565	1,084,619,129	542,914,605	476,112,425	190,794,672	172,489,648	479,915,288	436,017,056
Equipment rents—Dr. balance	79,141,431	77,836,844	40,452,149	40,003,414	d 2,892,835	d 1,936,389	41,582,117	39,769,819
Joint facility rent—Dr. balance	21,043,807	20,611,557	10,600,069	10,534,321	1,989,922	1,841,174	8,453,816	8,236,062
Net railway operating income	1,113,439,327	986,170,728	491,862,387	425,574,690	191,697,585	172,584,863	429,879,355	388,011,175
Ratio of expenses to revenues (per cent) ..	70.93	72.64	71.74	73.51	71.32	73.12	69.80	71.40

a Includes \$3,264,756 sleeping and parlor car surcharge. b Includes \$3,265,293 sleeping and parlor car surcharge. c Includes approximately \$2,568,060 back railway mail pay. d Deficit or other reverse items. e Includes \$34,311,482 sleeping and parlor car surcharge. f Includes \$33,773,846 sleeping and parlor car surcharge. g Includes approximately \$30,384,956 back railway mail pay.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

due weight to cost of reproduction at the time as of which it was proposed to use the valuation. As practically all of the various interests concerned with the valuation controversy were parties to the proceedings before the commission they will all be given an opportunity to express themselves as to how the commission should find the present reproduction cost and the weight to be accorded this element to comply with the court decisions.

Rock Island and Milwaukee Plan New Line Into Kansas City

The Chicago, Rock Island & Pacific and the Chicago, Milwaukee, St. Paul & Pacific have reached an agreement for the construction and operation of a joint double-track line between Birmingham, Mo., a point 12 miles north of Kansas City, and Polo, a point 37 miles north of Birmingham, which will serve as a link in the lines of both railroads between Chicago and Minneapolis and Kansas City. The joint line is one step in the plan of the Rock Island to provide itself with a new entrance into Kansas City from the north. The Interstate Commerce Commission has granted ap-

proval of the Rock Island's portion of the construction while it still has under consideration the Milwaukee part of the work and the joint application for approval of the operating agreement.

The Rock Island now has under construction a 37-mile single-track line between Coburn, Mo., a point on the present line 11 miles south of Trenton, and Polo, where connection will be made with the Milwaukee. The completed line, with the joint construction, will give the Rock Island a compensated grade of 0.5 per cent over its engine district between Trenton and Kansas City, 105 miles, in contrast with maximum grades of 1.4 per cent in both directions on the present line between those two points. It will also give the Milwaukee a grade of 0.5 per cent on a section of its Kansas City division between Polo and Birmingham.

The Rock Island now operates between Cameron Junction, Mo., and Kansas City, 57 miles, over the Chicago, Burlington & Quincy under a trackage agreement which expires on December 31, 1930. This agreement has been extended to October 31, 1931, within which time it

is planned to complete the construction. The Rock Island will continue to use the Burlington tracks and bridge over the Missouri river between Birmingham and Kansas City, 12 miles. While trains to and from Kansas City will no longer be run over the old line between Trenton and Cameron Junction the section between Trenton and Altamont will be used for trains to St. Joseph, Mo., and Atchison, Kan., and the section between Altamont and Cameron Junction for trains to Leavenworth, Kan.

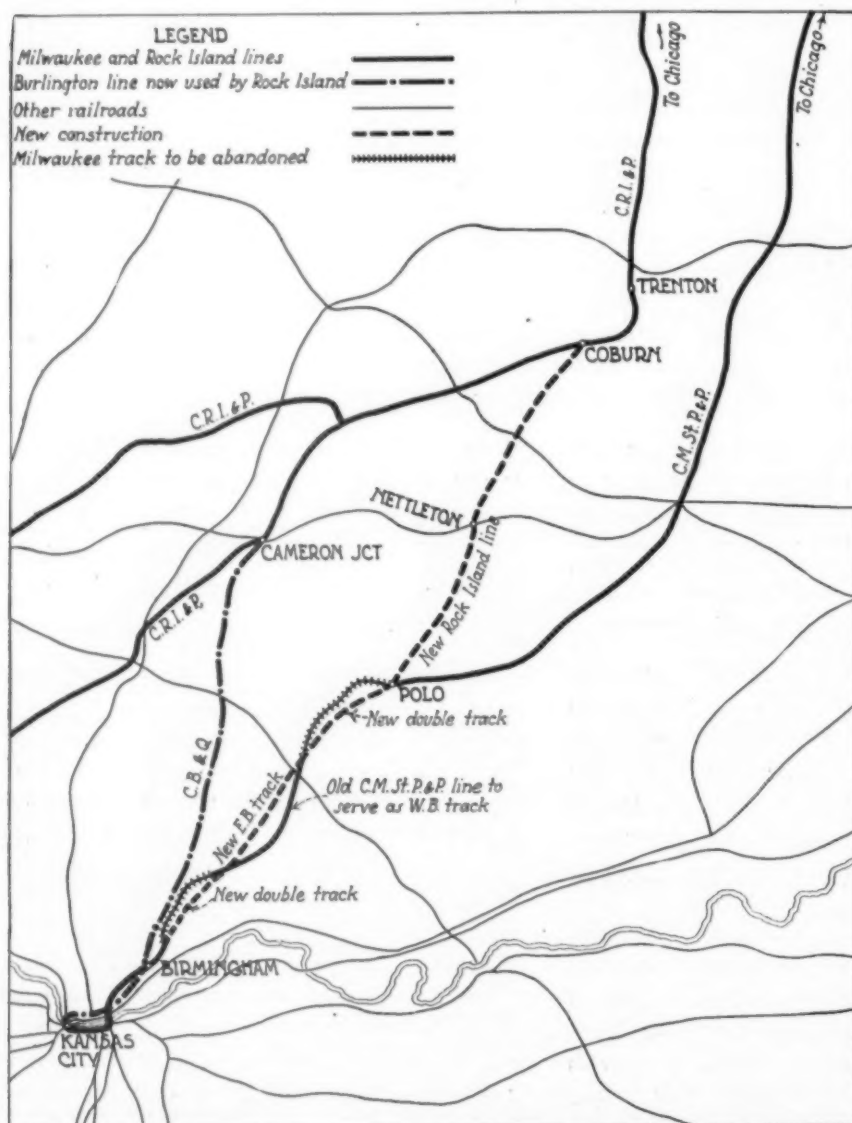
Between Polo, the junction point between the Milwaukee and the Rock Island, and a point about four miles west, the Milwaukee is to revise the grade of its present line to 0.5 per cent, the Rock Island constructing a second track, to be used for eastbound traffic. On the second section of the line west from Polo, about 7 miles, the Milwaukee will abandon its present line and new double track will be built by the Rock Island at joint cost. West of this section the Rock Island will construct a new line about 12 miles long, which will be used for eastbound freight traffic, while the present line of the Milwaukee through Excelsior Springs will be revised and used by each company for passenger traffic in both directions and for westbound freight. Between a point near Moseby and Birmingham, 13 miles, the present Milwaukee single-track line will be abandoned and a new double-track line will be constructed by the Milwaukee at joint cost.

Construction of the Rock Island between Coburn and Polo will require a total expenditure of about \$6,000,000, while the joint project between Polo and Birmingham involves for both roads a total estimated expenditure of \$6,000,000. This latter work will include the abandonment of 24 miles of the present Milwaukee line, the retention of 16 miles of track, on 5 miles of which grade revision will be necessary, and the construction of 58 miles of new track.

Safety Program for January

E. R. Cott, chairman of the Committee on Education, Safety Section, A. R. A., has issued Circular No. 250, in which he suggests that, during the month of January, railroad safety departments concentrate their attention on accidents "to persons struck or run over by cars or locomotives at places other than highway crossings."

"Don't Get Run Over"—the simplest possible injunction for either children or adults, employees or outsiders,—is set forth in this circular in the shape of five pictures, each one showing an example of a very glaring and well known kind of carelessness; yet examples of what is occurring very frequently even among experienced railroaders. Attention is called to the fact that of all the casualties reported under this head, in the Interstate Commerce Commission's annual statement, about 43 per cent every year are fatal. This percentage is nearly as bad as that in the statements of deaths and injuries to tramps; which, in former years, when tramps were very numerous,



New Rock Island Line into Kansas City, Showing Joint Section to be Constructed with the Milwaukee

usually showed fatalities of more than 50 per cent.

Mr. Cott questions the consistency of criticising an automobile driver who is struck at a grade crossing when the critic is a railroad man, who belongs to a class who sometimes get killed because they lack the wit or intelligence to walk the four or five feet necessary to place themselves between tracks instead of walking along on the track.

Business Survey Committee Named

The executive committee authorized by the National Business Survey Conference, held at the Chamber of Commerce of the United States on December 5, as announced by Julius H. Barnes, whom the conference asked to serve as chairman, carries 20 names besides the chairman. A larger general committee to be named later, will be broadly representative of the many lines of business enterprise and, may consist of as many as fifty men, who will serve as points of contact between the executive committee and trade associations and commercial groups.

In announcing the committee, Mr. Barnes said: "A preliminary study of the many reports submitted to the National Business Survey Conference indicates that there is nothing to cause further timidity or hesitation but, rather, warrants confidence in the early stabilization of business activity without justifying excessive optimism before the close of the test period of the next few months."

The committee, as determined at present consists of: Owen D. Young, chairman of the board, General Electric Company and Radio Corporation of America; Myron C. Taylor, chairman, finance committee, United States Steel Corporation; Thomas W. Lamont, partner, J. P. Morgan & Co.; Paul Shoup, president, Southern Pacific Company; Clarence M. Woolley, chairman of the board, American Radiator and Standard Sanitary Corporation; Henry M. Robinson, president, Los Angeles-First National Trust & Savings Bank; Walter C. Teagle, president, Standard Oil Company of New Jersey; James Simpson, president, Marshall Field & Co.; Cornelius F. Kelley, president, Anaconda Copper Mining Company; Elbert L. Carpenter, president, National Lumber Manufacturers Association, Minneapolis, Minn.; Pierre S. du Pont, chairman of the board, E. I. du Pont de Nemours & Co.; Lewis E. Pierson, chairman of the board, Irving Trust Company; George Horace Lorimer, editor, Saturday Evening Post; Walter S. Gifford, president, American Telephone and Telegraph Company; Alvan Macauley, president, National Automobile Chamber of Commerce; John G. Lonsdale, president, American Bankers Association; Stuart W. Cramer, director, Cotton Textile Institute; Charles Cheney, president, National Industrial Conference Board; Silas H. Strawn, chairman of the board, Montgomery Ward & Co.; Harry Chandler, publisher, Los Angeles Times.

Mr. Barnes said the committee will be called into consultation at an early date but

that "nothing of an emergency character exists in the present business situation to require undue haste in its work."

Railroads Stepchild of Nation's Industries

The railroads of the country were depicted as "The Cinderella of Industry" by Z. G. Hopkins, assistant to the president of the Missouri-Kansas-Texas in an address at the annual Christmas party of the St. Louis Railroad Club on December 13. "We have heard much in certain quarters during the last few years, about the prosperous condition of the railroads," Mr. Hopkins said. "It is interesting to compare what the railroads of the country have paid in dividends to their stockholders with what some other industries have paid."

"Railroad figures are naturally large because the industry is a gigantic one. During the eight years since the rail lines came out from under government control the average annual total of dividends paid stockholders of all the railroads of the country has been approximately \$345,000,000.

"That is a large sum of money. But last year six manufacturing companies, not including Ford, the United States Steel Corporation, the American Telegraph & Telephone Company or the General Electric Company paid to their stockholders in dividends, a total of \$365,000,000 or \$20,000,000 more than the average paid annually by all the railroads of the country in eight years.

"I make no suggestion that the companies cited should not have been permitted to earn all these dividends for their stockholders, but why, in the face of such earnings by other industries, should the public become excited over railroad earnings?"

Mr. Hopkins went on to point out that the combined dividends of General Motors, Chrysler, Nash, Packard, Hudson and Hupp, amounted to \$226,000,000 last year, as compared with \$176,000,000 paid in dividends to stockholders by the Pennsylvania, the New York Central, the Santa Fe, the Northern Pacific, the Southern Pacific, the Southern and the Union Pacific, the rails of which, combined, serve nearly all sections of the country.

"We all know the story of Cinderella," he concluded. "It was her part to carry in the wood and make the fires, and then carry out the ashes. She prepared the meals and washed the dishes afterward. All the necessary work of the household fell to her lot, but she was denied the privilege of meeting socially the friends of the family and refused the luxuries that were the lot of her more fortunate sisters.

"In like manner, the railroads perform the great transportation service of the country, but in lesser degree than other industries are they permitted, to participate in the fair rewards of industry. In no year since they emerge from government control have they been permitted to earn the fair return fixed by Congress in the transportation act. They continue, as they have been for many years, the stepchild of industry."

Traffic

The Wabash has moved its Chicago freight traffic department to 327 South La Salle Street.

The Denver & Salt Lake has filed reduced freight rates beginning January 1. Between Denver and Craig the first-class rate is reduced from \$2.87 to \$2.00, while between Denever and Steamboat Springs it is reduced from \$2.70 to \$1.75.

C. A. Cairns, passenger traffic manager of the Chicago & North Western has been elected chairman of the Executive committee of the Western Passenger Association for the tenth consecutive year.

At a meeting of the Houston Traffic Club on December 10, the following officers were elected for the ensuing year: President John W. Daniels, traffic manager of the Peden Company; vice-president, William H. Meyer of the Luckenbach Steamship Company; treasurer, G. L. Thacker of the Universal Terminal Warehouse Company; and secretary, A. R. Canfield of the Southern Pacific Steamship Lines.

At a meeting of the Transportation Club of Louisville on December 10, the following officers were elected for the ensuing year: President, E. M. Haynes, general traffic manager of the Mengel Company; vice-president, W. H. Robinson, general freight agent of the Chicago, Indianapolis & Louisville; secretary, S. A. Cash, traffic manager of B. F. Avery & Sons; treasurer, Lester P. Stiebling of the Southern.

The Interstate Commerce Commission has made public a proposed report by Examiner M. L. Boat and R. V. Pitt, assistant director of its Bureau of Traffic, recommending that carriers serving south Atlantic and Gulf ports and connecting lines be authorized to establish or continue, subject to certain conditions, export and import rates on classes and commodities between points in Central and Western Trunk Line territories and the ports without observing the long-and-short-haul clause of the fourth section.

The Chicago, Milwaukee, St. Paul & Pacific has established two new passenger trains, one between Seattle, Wash., and Tacoma and Spokane, known as the Washington, and another between the Twin Cities and Chicago, known as the Riverside. The Washington leaves Tacoma at 8 p. m. and Seattle at 9:45 p. m. with an observation car, sleeping cars, a dining car and coaches, and arrives in Spokane at 7:45 a. m. Returning, it leaves Spokane at 9 a. m., with an observation-parlor car, a dining car and coaches, and arrives at Seattle at 7 p. m. and Tacoma at 8:35 p. m., thereby traversing the Cascade Mountains during daylight. The Riverside leaves Minneapolis, Minn., at 9:50 a. m. with an observation

car, a parlor car, a dining car and coaches, and St. Paul at 10:30 a.m. and arrives in Chicago at 9:15 p.m.

The Public Service Commission of New York has authorized the discontinuance of certain flag stations on the Pennsylvania as follows: Non-agency passenger stations at Letchworth Park, Lewis, Honeyeye Junction, Canawaugus, Whites and Blue Stone; non-agency passenger and freight stations at West Nunda, Halite, Severance, and Carrollton; non-agency freight stations at Terminal, Shongo and Riverside Junction; freight station for carload delivery, Elma; freight stations for less than carload delivery, Westons, and Wolfe Run. Certain privileges at Halite, Wolf Run and Severance are continued.

The "Christmas gift order"—embellished with holly and other decorations and designed for use where a giver wishes to give money instead of the actual gift—has appeared, somewhat modified, in the railroad field. The Pennsylvania has placed on sale in its principal ticket offices a paper of this kind which can be used for sending to a distant friend complete railroad transportation and Pullman accommodations for a railroad trip. In addition, this holiday prepaid order, which shows the names of the purchaser and the recipient, provides for the presentation of a sum of money to the passenger to cover meals and incidental traveling expenses.

Motor Transport Legislation

Chairman Couzens of the Senate committee on interstate commerce, has been authorized by the committee to appoint a sub-committee of five members to consider and hold hearings on his bill, S.1351, for the regulation of interstate bus transportation. In the House, Representatives Huddleston and Hoch have introduced bills "to protect the right of recovery for damage in connection with the operation for hire of passenger motor vehicles in interstate and foreign commerce," and some efforts will be made to confine the legislation to some such simple provision for the furnishing of bonds by operators.

Rate Reduction Proposal Defeated in Senate

Twelve United States Senators on December 13 voted for an amendment proposed by Senator McMaster, of South Dakota, to substitute for the pending bill to reduce income taxes a direction to the Interstate Commerce Commission to formulate a proposal applying \$100,000,000 to the reduction of freight rates on wheat, cotton, other raw agricultural products and livestock, first making a 50 per cent reduction in export rates from terminal market centers to seacoast cities. The proposal aroused considerable debate among the agrarian Senators, but 60 Senators voted against it. Those who voted for the amendment were: Blaine, Blease, Brookhart, Frazier, Harris, Heflin, Howell, McMaster, Norbeck, Nye, Shepard and Smith.

Use of Single-Room Cars Extended

The New York Central now runs single-room Pullman sleeping cars between New York and Buffalo each night, leaving New York at 11:50 and leaving Buffalo at 9:55. These cars, made up wholly of single rooms and giving substantially complete hotel conveniences, have been in service for several months on the Central lines between Cleveland and Chicago and between Detroit and Chicago, and are said to have grown constantly in popularity.

The Pennsylvania announces that its "fleet" of bedroom cars has been enlarged by adding one of these single-room sleepers to train No. 35, leaving Philadelphia for Pittsburgh at 10:15 p.m. and to train No. 36 leaving Pittsburgh for Philadelphia at 11:35. The reader of the news item is reminded that the rooms in these cars are intended each for occupancy by only one person.

Western Shippers Predict Traffic Gain

The eighteenth regular meeting of the Central Western Shippers Advisory Board was held at Cheyenne, Wyo., on December 11 and was concluded with a banquet at which Carl Gray, president of the Union Pacific, spoke on the reciprocal value of efficient railroad service to both shippers and railroads. During the meeting, J. R. Howard, organization director of the Federal Farm Board, spoke on the policy of the board toward agriculture. At the business session, which was attended by over 350 representatives of shippers and railroads, it was stated that an increase in commodity shipments of 1.5 per cent was anticipated for the first quarter of 1930. Items for which increases are expected are as follows: Grain 4 per cent, mill products 2 per cent, hay 1 per cent, beans 13 per cent, potatoes 22 per cent, dairy products 5 per cent, ore 7 per cent, sand and gravel 8 per cent, sugar 3 per cent and cement 18 per cent. Decreases are anticipated for livestock (3 per cent) and for coal (2 per cent). The aggregate number of cars required to handle the business of the first quarter was estimated to be 490,000.

Allegheny Board Foresees Traffic Gain

The Allegheny Regional Advisory Board met in Pittsburgh, Pa., on December 12. A summary of the reports of commodity committees indicates that, measured by the number of cars required, the freight traffic in this territory for the first three months of 1930 will be 4.3 per cent above the number of cars actually used in the same quarter last year. The expected improvement is made up largely of coal and coke, in which an increase of 6.8 per cent is predicted. Other increases are: Petroleum, etc., 5.6 per cent; machinery and boilers, 6.2; cement 8.3; canned goods, 6.0; sand and gravel, 16.2.

Producers of lumber and forest products expect a slight decrease. Glass and glass products may fall off 11.0 and glass sand 13.4 per cent.

The general condition of business throughout the district was reported as fair to good.

The whole company were entertained at luncheon by the H. J. Heinz Company and afterwards they made a tour of inspection of the Heinz manufacturing plant. R. E. Cook, traffic manager of the H. J. Heinz Company is general chairman of the advisory board.

Pacific Northwest Shippers' Board

Pacific Northwest business, during the first quarter of 1930, will equal that of the last quarter of 1929, according to commodity committee reports submitted at the meeting of the Pacific Northwest Advisory Board held at Portland, Oregon, on December 13. General manufacturing and agriculture will need about the same number of cars during the first three months of 1930, although the lumber demand is expected to be less during the first two months of 1930 as compared with the last quarter.

Among those who addressed the meeting were Carl R. Gray, president of the Union Pacific, Melvin W. Cassmore, of the Business Chronicle, Seattle, Wash., W. G. Perrow, of the Lehigh Portland Cement Company, and H. G. Taylor, of the Car Service Division, A. R. A.

Mr. Gray said in part:

In analyzing the recent "flurry" on the New York stock exchange, the results of which are still in considerable doubt, I have found three classes affected; those who made paper profits; those who had no direct interest in the market; and a number who have taken advantage of it as an alibi, and who are now readjusting their manner of living. I also found that considerable of the money formerly in stocks is being released for useful purposes instead of being tied up in speculation, that this "flurry" has had but little effect on sound business and that recession will be accomplished with but little interference.

I have just attended a meeting of the Central Western Shippers' Advisory Board. They expect an increase in car loadings of at least 1½ per cent during the first quarter of 1930. Reports from the Pacific Northwest Advisory Board anticipate a slight decrease. Reports from the southwestern part of country show that a decrease of about 1.4 per cent in loadings for the first three months of 1930 is expected. Reports from trans-Missouri for the first three months will show a decrease of 3.3 per cent. East of Chicago and Mississippi points, carloadings for the same period in 1930 have not yet been forecast.

However, these decreases will be of no great magnitude, and withal, in my opinion, the various sections of the country are in a very healthy condition and nowhere verge upon a catastrophe. Business will gradually free itself from adverse conditions and I see no cause for alarm. Few communities are seriously affected. There are three major products, however, that are affected, namely: coal, oil and lumber, and representatives of these commodities face a very serious tax problem. A readjustment of tax burdens is quite necessary and I trust means will be devised to help the lumber industry.

The real industrial age started in 1918, and in this age real progress has been made along the lines of co-operation and construction. Early in this period it was found that the railways were not designed to be run under a monopolistic regime, but that they could function much better under private operation. As a result of the co-operation of the various railways and the pooling of their equipment, there have been no serious car shortages and congestions such as occurred under the old system of inefficiency and discord.

As an example, in the wheat fields of Kansas and Oklahoma where the Santa Fe system operates so successfully, a greater amount of equipment was provided to move this crop than ever before, a total of 15,600 cars being provided for

the 1929 crop. However, with the improved methods of harvesting and the fast motor trucks which brought the product to loading terminals, this great amount of equipment was insufficient. The railroad appealed to the Car Service Division of the American Railway Association, and supplies of cars were sent from all railways and in two days the situation was relieved.

Baltimore Differential Complaint Dismissed

The Interstate Commerce Commission, by a decision made public on December 18, has dismissed the complaint filed by the Baltimore Chamber of Commerce in which it sought an increase in the differentials on export and import traffic by which rates to Baltimore are made lower than the corresponding rates to New York. The complaint alleged that the differentials are too low to reflect the advantages of Baltimore either as to line-haul service or terminal costs and that therefore the rates are unduly preferential of New York. The commission finds that the rates are not unreasonable, unduly prejudicial or otherwise unlawful. Four commissioners, Eastman, Campbell, Taylor and McManamy dissented, and Eastman, Campbell and Taylor wrote separate dissenting opinions. Commissioner Woodlock, concurring, said that while he did not think the record sufficient to warrant disturbing the differential adjustment of the Atlantic ports which has so long existed, it is likely that sooner or later this adjustment will require a comprehensive study of all its merits. The report differs from the proposed report by Examiner Trezise, who recommended increases in the differentials.

"The record shows," the report says, "that Baltimore has prospered under the present and long-standing differential adjustment, although possibly not to the same extent as New York. Fundamental differences in geographic and commercial advantages may account for differences in growth of population and commerce. It also indicates that both ports have lost considerable traffic, particularly grain, to the port of Montreal, and that there is little probability of any of this traffic being recovered by any United States port irrespective of the measure of the port differentials."

Commissioner Eastman, whose dissenting report was twice as long as that of the majority, favored a scale of class differentials by which the Baltimore rates would range from 13 cents on first class down to 4 cents on sixth class under the New York rates, and also the recommendation of the examiner that Baltimore's differential should be 2 cents on ex-lake grain and flour.

A TRIBUTE to the memory of a Northern Pacific foreman, J. H. Newman, has been erected in the cemetery at Glendive, Mont., in the form of a granite plaque bearing the words: "Erected to our friend, 'Heck' Newman, by the Yakima Woolgrowers." Mr. Newman, who was foreman of the stockyards at Glendive for 20 years, was declared to be a typical representative of the old west and was known by stock shippers from one end of the railroad to the other.

Rolling Stock Cartel Formed in Europe

According to Department of Commerce advices from Commercial Attache F. W. Allport (Paris), European rolling stock manufacturers have recently formed an international cartel similar to those previously organized in other industries. Austria, Belgium, Hungary, Italy and Switzerland are among the countries represented. A central sales organization for the sale of railroad cars by members of the cartel will presumably be formed in the near future.

Finland Completes New Lines

According to Department of Commerce reports, about 130 kilometers (approximately 81 miles) of new railroad lines will be completed and opened for traffic in Finland by the end of 1929. Lines between Utajarvi and Vaala (34 kilometers) and between Rumo and Nurmes (43 kilometers) were opened on October 16, while a number of shorter sections were opened earlier in the year. The stretch of 25 kilometers between Ryrpaa and Valkjarvi is nearly completed, and trains will be operated over it early in 1930.

Beating London Fogs

The Southern of Great Britain, announcing recently the introduction of color-light signals in place of semaphores on an important section of the road—between Spa Road and New Cross—added the statement that the use of this type of signal on the company's lines, which was installed some time ago on a large part of the suburban system, has led to a general speeding up of all traffic, and that in foggy weather they have proved a great help. These signals give "three-block information;" that is to say, a train occupying a given block sets a signal at red behind it at the entrance of the block; a signal at yellow one block farther in the rear, and a signal consisting of two yellow lights, two blocks in the rear. The present addition has allowed the abolition of signal towers at six points.

Czechoslovakian Railways Improve Schedules

The Czechoslovakian Ministry of Railways has just announced the introduction of improved connections and schedules for international trains operating through Czechoslovakia, according to advices from Commercial Attache K. L. Rankin, Prague. A new express on the Berlin-Prague-Budapest-Belgrade line will cut the running time between those points materially, making the trip between Berlin and Prague in six hours as compared with the present time of 7½ hours. The same train will run from Prague to Budapest in 10 hours, reaching Belgrade about 10½ hours later, in time to connect with the Simplon-Orient express. Another new train will reduce the time from Prague to Munich to

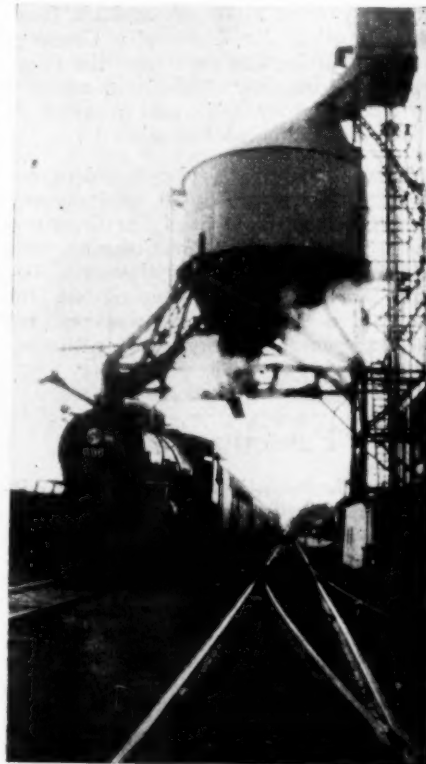
Foreign Railways

slightly more than eight hours, with connections at Pilsen with expresses for Vienna and Carlsbad. The principal Czechoslovakian watering places are also to be connected with a greater number of foreign centers, chiefly in Germany, by the introduction of additional through cars.

Trans-Persian Construction Progresses

Reports from the Department of Commerce indicate that construction on the new trans-Persian railroad made rapid progress during the past summer. In the north, on the German section, rails were laid almost to Sari, 115 kilometers from Bandar Shah, the terminus of the railroad on the Caspian Sea, grading was continued to Aliabad, 35 kilometers farther, provisional piers were completed at Bandar Shah and some rolling stock was landed. On the American section, in the south, 100 kilometers of rails were laid, and grading was advanced to Dizul, 251 kilometers from Bandar Shapur, the southern terminus. Port work at Bandar Shapur progressed, piers for the Karum river bridge at Ahwaz were placed and the erection of steelwork was begun. The Persian Council of Ministers approved plans for a \$200,000 station and administration building at Ahwaz. Work on both sections of the line has reached the mountains, leaving about 1,000 kilometers of difficult construction between Aliabad and Dizul for which no contracts have yet been awarded.

* * *



A Wabash Train at Brunswick, Mo.

Equipment and Supplies

Locomotives

THE UNION RAILROAD is inquiring for one locomotive.

THE WABASH has ordered 25 of the 4-8-4 type locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of November 2.

THE MISSOURI PACIFIC has ordered five of the 4-8-2 type locomotives from the American Locomotive Company and 25 of the 2-8-4 type freight locomotives from the Lima Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of November 9.

THE CANADIAN NATIONAL is building 10 eight-wheel switching locomotives in its own shops. This company has also ordered 12 of the 4-8-2 type locomotives from the Montreal Locomotive Works and 18 of the 2-10-2 type from the Canadian Locomotive Company. Inquiry for this equipment was reported in the *Railway Age* of December 7.

Freight Cars

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC is now inquiring for 700 box cars of 50 tons' capacity.

THE CANADIAN NATIONAL has ordered 25 tank cars of 10,000 gal. capacity, from the Canadian Car & Foundry Company and 200 refrigerator cars from the Eastern Car Company. This is in addition to its order for 4,425 cars reported in the *Railway Age* of December 14.

THE READING has placed orders for 2000 steel box cars of 50 tons' capacity as follows: Pressed Steel Car Company, 400; Standard Steel Car Company, 400; American Car & Foundry Company, 600; and Bethlehem Steel Company, 600. Inquiry for this equipment was reported in the issue of *Railway Age* for November 30.

Passenger Cars

THE MISSOURI-KANSAS-TEXAS is inquiring for three dining cars.

THE CANADIAN NATIONAL is inquiring for six compartment sleeping cars, 12 lounge cars and five dining cars.

THE CANADIAN NATIONAL has ordered 20 baggage cars and 15 express refrigerator cars from the National Steel Car Corporation.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA have ordered one combina-

tion passenger and baggage gasoline rail motor car and one passenger trailer car, from the J. G. Brill Company.

Machinery and Tools

THE MISSOURI PACIFIC has ordered one Monarch 24-in. by 14-ft. heavy duty motor driven geared head lathe, for its Bonne Terre, Mo. shops, one Micro Machine Company's motor driven pin grinder, for its Kansas City, Mo. shops, and one Putnam Machine Works 54-in. heavy duty motor driven tire turning lathe, for its Houston, Tex., shops, from Manning, Maxwell & Moore, Inc.

Iron and Steel

THE CANADIAN NATIONAL has placed orders for 120,000 tons of steel required for its construction program during 1930. Of this total 80,000 tons were ordered from the Dominion Iron & Steel Company and 40,000 tons from the Algoma Steel Mills, at Saulte Ste. Marie.

Signaling

THE TEXAS AND PACIFIC has ordered from the General Railway Signal Company an electric interlocking with 16 working levers for installation at Cisco, Tex.

THE MISSOURI PACIFIC has contracted with the General Railway Signal Company for a dispatching machine with 11 working levers for the double track line between Diaz, Ark. and Grand Glaize, 15 miles. The machine will be located at Newport.

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company a dispatching machine for the control of two train order signals at Campbell, Ill. The machine is to be located at Danville, a point about three miles distant.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company materials for the installation of dispatcher control signaling to be installed on its line at Richey, Ind. The machine will be at Van Wert, Ohio, a distance of five miles away.

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered from the Union Switch & Signal Company material for an electro-pneumatic interlocking at Doswell, Va., where the line crosses the Chesapeake & Ohio. The machine will be Model 14 and will have 19 levers. Color-light signals will be used.

Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon December 27, on its requirements of steel wheels for the New York Central Lines.

Supply Trade

Geo. C. Hannaway, sales manager of the T. J. Moss Tie Company, St. Louis, Mo., and W. W. Davis, superintendent at Cape Girardeau, Mo., have been elected vice-presidents with headquarters at St. Louis.

The Bird-Archer Company has been organized, effective January 1, 1930, with headquarters at Montreal, Que. P. B. Bird is president, L. F. Wilson, senior vice-president, L. G. Calder vice-president and general manager, C. A. Bird, secretary and J. Ferguson Smith, treasurer.

Fred G. Zimmerman, vice-president, secretary and treasurer of the T-Z Railway Equipment Company, Chicago, has resigned and disposed of his interest in order to engage in other business. N. B. Van Arsdale, during the past three years with Magnus Co., Inc., and prior to that time with the mechanical department of the Union Pacific at Omaha, have been elected secretary and treasurer of the T-Z Railway Equipment Company.

Dearborn Opens New Laboratory

The Dearborn Chemical Company has completed an addition to its manufacturing plant at Chicago in the form of a new laboratory to be used for research as well as for routine analysis and the factory control work. The new facilities, opened on December 16, entirely replace and more than double the capacity of the old laboratories. The laboratories occupy an entire floor of the factory and comprise a main room, about 50 ft. wide and 100 ft. long, eight smaller rooms, a library, a store-room, a receiving room and three offices.

The chemical hoods are tile inside and out and all table tops and sinks are stone. Steel shelving is installed for storing chemicals and glass ware and all exposed plumbing and other metal work in the laboratory is chromium plated or of special rust-resistant steel. The eight side rooms are equipped for coal analyses, oil testing, factory control work, bacteriological examinations and special research. One of the rooms has a small electrically-heated boiler of 500 lb. capacity for experimental work, and electrical apparatus is installed for making hydrogen-ion determinations in connection with water treatment studies. The library, about 18 ft. wide and 24 ft. long, contains a large collection of reference works and files of current literature which have been catalogued and card indexed, and it is open to the public.

Obituary

Frederick L. Wells, president of the Duner Company, Chicago, died on December 9, after a long illness.

Construction

AKRON, OHIO.—This city plans to award a contract on January 20 for the construction of a viaduct over the tracks of the Baltimore & Ohio, the Erie and the Pennsylvania at Thornton street.

ATLANTIC COAST LINE.—This company has applied to the Interstate Commerce Commission for authority to build an extension from Medulla to Ridgewood, Fla., 7 miles.

BALTIMORE & OHIO.—A contract has been awarded by this company to the Vang Construction Company, Baltimore, Md., for the construction of bridges at Freeport, Ohio, at an approximate cost of \$60,000.

CHESAPEAKE & OHIO.—Examiner Ralph R. Molster of the Interstate Commerce Commission has submitted a proposed report recommending that the commission authorize the construction of an extension from a point near Edwight in a general southeasterly direction to a connection with the Piney Creek branch at or near Surveyor, W. V., 19.2 miles, on condition that the C. & O. grant to the Virginian, by means of trackage rights, full and equal access to all mines to be served by the extension and branches thereof, together with an option to acquire a half interest in the line at cost within ten years.

CHICAGO, BURLINGTON & QUINCY-COLORADO & SOUTHERN.—These companies plan the expenditure of \$100,000 for the construction of an addition to the locomotive terminal at Twenty-third street and \$100,000 for the construction of additional yard trackage at Thirty-first street in Denver, Colo., in 1930. It is also planned to install an automatic block signal system between Denver and Cheyenne, Wyo.

DELAWARE & HUDSON.—The New York Public Service Commission has ordered the elimination of the South Grand, East and Grove street crossings of this company's tracks in Cobleskill, N. Y., by carrying South Grand street under the tracks at a cost of approximately \$237,000 and closing the East and Grove street crossings. The plan also includes the construction of a pedestrian subway at Grove street and an overhead pedestrian footbridge at East street.

DENVER & RIO GRANDE WESTERN.—The budget of this company for 1930 provides for the expenditure of \$275,000 for the strengthening and replacement of bridges and culverts, \$376,300 for construction of additional yard and passing tracks, and \$600,000 for miscellaneous improvements and betterments. An appropriation of \$180,000 has also been made for the completion of the automatic block signal system.

FLORIDA EAST COAST.—A contract has been awarded to C. H. Johnson, Jackson-

ville, Fla., for the construction of new passenger station facilities at Boca Raton, Fla., at a probable cost of \$50,000.

GREAT NORTHERN.—This company plans the construction of a new freight station between Arizona and Utah streets at Butte, Mont., during 1930 at a cost of approximately \$200,000.

LEHIGH VALLEY.—In accordance with plans prepared by the New York state department of Public Works, the Public Service Commission has ordered the elimination of School House and Burt's crossings of the Lehigh Valley, south of Ithaca, N. Y., by closing both highways and diverting traffic to a new highway to be carried over the grade of the railroad north of the present crossings. The cost of the work is estimated at \$175,000.

LONG ISLAND.—This company is receiving bids for the elimination of a grade crossing at Main avenue, Douglaston, N. Y. The anticipated cost of the work, which involves changing the location of the avenue and carrying it over the grade of the tracks, is \$450,000. Plans for the construction of a concrete and steel bridge to carry the railroad tracks over Montauk highway in Sayville, N. Y., at an approximate cost of \$170,000, have been submitted to the Public Service Commission of New York for its approval.

MISSOURI PACIFIC-ST. LOUIS-SAN FRANCISCO.—The Missouri Highway Commission has awarded a contract to the F. V. Ragsdale Company, Memphis, Tenn., for the construction of a 600-ft. reinforced concrete and steel viaduct over the tracks of these railroads at Poplar Bluff, Mo. The railways will share in the cost of the structure, which will involve an expenditure of \$60,000.

NEW YORK CENTRAL.—The Public Service Commission of New York has directed the elimination of the following grade crossings on this company's lines: Main street, Pine street and Town road in Redwood, N. Y., by closing the existing crossings and diverting traffic to a new over grade crossing, at a cost of approximately \$139,300; Mexico-Union Square state highway crossing in Maple View, N. Y., by raising the grade of the highway on the existing line and carrying it over the tracks at an estimated cost of \$103,200, and the Canton-Potsdam state highway crossing two miles north of Canton, N. Y., by carrying the road under the tracks south of the present crossing at a probable cost of \$90,000.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved the construction by this company of a switch track at grade across West Shore avenue in Buffalo, N. Y., subject to a revocable permit given by the city

of Buffalo on October 21 and on condition that the railroad flag every train or engine movement over the crossing. The new siding, application for which was reported in the *Railway Age* of November 30, is in the industrial section of Buffalo and will provide shipping facilities for industries located east of the existing New York Central tracks.

NEW YORK, PITTSBURGH & CHICAGO.—A motion to dismiss this company's application to the Interstate Commerce Commission for authority to construct a line from Allegheny to Easton, Pa., has been filed by the Baltimore & Ohio, the Delaware, Lackawanna & Western, the Lehigh Valley, the New York Central, the Pennsylvania and the Reading. They take the position that the applicant is not a corporation and has no power to construct and operate its proposed line and that it has not obtained the approval of the Public Service Commission of Pennsylvania.

PENNSYLVANIA.—This company has recently awarded contracts to the H. R. Blagg Company, Dayton, Ohio, for the construction of a new freight station and team track facilities at Dayton, at an approximate cost of \$208,000, and to H. T. Campbell Sons Company, Towson, Md., for the construction of an under grade bridge to eliminate York road grade crossing at Cockeysville, Md., at an estimated cost of \$42,000. Elimination of the Napier grade crossing of the Pennsylvania north of Franklinville, N. Y., by carrying the Buffalo-Olean state highway, on which the crossing is located, over the grade of the tracks at an approximate cost of \$151,000, has been directed by the Public Service Commission of New York.

ST. LOUIS SOUTHWESTERN.—Included in the budget of this company for 1930 are the expenditure of \$283,200 for the construction of additions and improvements to bridges, structures and stations, \$191,200 for river protection and the Cotton Belt share of public improvements, \$146,500 for the improvement of shops and engine house facilities and \$342,800 for additions to present trackage facilities.

TEXAS & PACIFIC.—This company expects to receive bids about January 1 for the grading of the right of way for the construction of the extension of the Texas-New Mexico from its present terminus at the Texas-New Mexico state line to Lovington, N. M., 70 miles. The cost of the completed extension is estimated at \$1,825,000.

YREKA.—Lois G. Gorman, examiner for the Interstate Commerce Commission, has submitted a proposed report recommending that the commission deny this company's application for authority to construct an extension from Yreka City to Etna, Calif., 37.8 miles, on the ground that the applicant appears to have determined upon the project without a competent estimate of net earnings and without very definite assurances as to the traffic possibilities or as to its ability to finance the project.

Financial

BRISTOL.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to discontinue operation in interstate and foreign commerce with a view to the abandonment of its line from Bristol to New Haven Junction, Vt., 6.14 miles.

CANADIAN PACIFIC.—Bonds.—A syndicate made up of the National City Company, Lee Higginson & Co., the Bank of Montreal, the Dominion Securities Corp., the Royal Bank of Canada, the Guaranty Company of New York, the Union Trust Company of Pittsburgh, Wood, Gundy & Co., Inc., A. E. Ames, Ltd., and the Canadian Bank of Commerce, are offering at par \$30,000,000 of this company's 5 per cent collateral trust bonds, dated December 1, 1929, and due December 1, 1954.

CENTRAL VERMONT.—Reorganization.—The Interstate Commerce Commission has approved this company's reorganization plan involving the issue of \$10,000,000 of common stock, \$5,000,000 of series A debentures and \$12,000,000 of first and general mortgage series A bonds, the new securities to be delivered to the Canadian National in payment for obligations of the old company sold under foreclosure.

CENTRAL VERMONT.—Equipment Trust.—The Interstate Commerce Commission has authorized this company to assume liability for \$1,849,000 of its 1929 equipment trust 5 per cent certificates to mature in installments until 1944. Bids were asked for but the only bid received was rejected and the certificates are to be used as security for temporary financing pending more favorable market conditions.

CHESAPEAKE & OHIO.—Stock.—This company has applied to the Interstate Commerce Commission for authority to issue \$24,748,875 of common stock in exchange for the property of the Hocking Valley and to assume obligation and liability in respect of its bonds and other indebtedness. The stock is to be distributed by the Hocking Valley to its stockholders at the rate of 2¼ shares for each share of H. V. held. The C. & O. owns over 80 per cent of the Hocking Valley stock.

CHICAGO, KALAMAZOO & SAGINAW.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to extend its line from Richland Junction to Hooper, Mich., 10 miles, by purchasing part of the old Michigan (electric) Railroad.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the property of the Chicago, Milwaukee & Gary, which it controls through stock ownership, except 15.14 miles of line between Kirkland and Rockford, Ill., for which the C. M. & G. filed

an application for authority to abandon. The Milwaukee proposes to assume \$3,000,000 of first mortgage bonds and other liabilities.

CHICAGO, ROCK ISLAND & PACIFIC.—Bonds.—The Interstate Commerce Commission has authorized this company to pledge from time to time until December 30, 1930, \$5,497,000 of bonds as collateral for short-term notes.

CHICAGO, ROCK ISLAND & PACIFIC.—Bonds.—This company has been authorized by the Interstate Commerce Commission to pledge from time to time not to exceed \$5,497,000 of bonds as security for short term notes.

CHICAGO, ROCK ISLAND & PACIFIC.—Trackage Rights.—The Interstate Commerce Commission has authorized this company to operate under trackage rights into the Colorado Springs (Colo.) terminal of the Denver & Rio Grande Western, and to use jointly some of this company's facilities at Denver. The latter company has been authorized to use jointly certain facilities of the former company at Colorado Springs.

DELAWARE & NORTHERN.—Stock.—This company has applied to the Interstate Commerce Commission for authority to issue 50,000 shares of no-par common stock for the purpose of paying for the property of the D. & N. Railroad in connection with a reorganization.

DENVER & RIO GRANDE.—Final Valuation.—The Interstate Commerce Commission's final valuation report, as of 1919, finds the final value for rate-making purposes of the property owned and used for common-carrier purposes to be \$101,500,000 and that of the property used but not owned to be \$2,757,137. The final value for the Rio Grande Junction, leased to the D. & R. G., was placed at \$2,280,000. The investment in road and equipment, as stated on the books of the D. & R. G. was \$179,722,857. With certain readjustments, the report says, this would be reduced to \$176,845,162.

DENVER & RIO GRANDE WESTERN.—Bonds.—The Interstate Commerce Commission has authorized this company to issue \$3,464,000 of refunding and improvement mortgage 5 per cent bonds, series B, in partial reimbursement for capital expenditures, the bonds to be pledged and repledged from time to time as collateral security for short term notes.

Trackage Rights.—See Chicago, Rock Island & Pacific item elsewhere in this department.

FONDA, JOHNSTOWN & GLOVERSVILLE.—Abandonment.—The Interstate Commerce Commission has authorized this company to abandon its steam line from Broadalbin Jct., N. Y., to Northville, 12 miles.

GEORGIA AND FLORIDA.—Receivers Certificates.—The Interstate Commerce Commission has authorized the receivers of this company to issue \$100,000 of receivers certificates to be sold at not less than par.

GRAND TRUNK WESTERN.—Equipment Trust.—The Interstate Commerce Commission has authorized this company to assume liability in respect of \$4,238,000 of its 1929 equipment trust 5 per cent certificates maturing in installments until 1944. The company not having been offered a satisfactory price for this issue it will use them as security for temporary financing awaiting better market conditions.

GREAT NORTHERN.—Tunnel Investment Charged Off.—The Interstate Commerce Commission has authorized this company to charge off through the profit and loss account instead of through operating expenses \$10,000,000 of investment in old line and tunnels abandoned upon operation of the new Cascade tunnel.

GULF, MOBILE & NORTHERN.—Merger.—The opposition of the minority stockholders to the proposed merger of this railroad with the New Orleans Great Northern has been withdrawn, practically all minority stock having been deposited. The formal notice from the Interstate Commerce Commission, authorizing the merger, is expected at any early date.

KANSAS & SIDELL.—Control of Yale Short Line.—The Interstate Commerce Commission has authorized this company to acquire control by lease of the Yale Short Line which extends from a point near Casey, Ill., southward to Yale, about 13 miles.

LOUISIANA & ARKANSAS.—Note.—This company has applied to the Interstate Commerce Commission for authority to renew from time to time a promissory note for \$2,600,000 at 6 per cent and to pledge as collateral security \$3,250,000 of first mortgage 5 per cent bonds.

LOUISVILLE & NASHVILLE.—Lease.—This company has applied to the Interstate Commerce Commission for authority to continue control of the Southeast & St. Louis, which has a line from East St. Louis, Ill., to Evansville, Ind., by extending the present lease for 50 years from January 27, 1930.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Bonds.—The Interstate Commerce Commission has authorized the Wisconsin Central to issue \$10,000,000 of first and refunding mortgage bonds to be sold to the Soo Line at not less than 80 and the proceeds used to pay principal and interest on \$7,500,000 of three-year 5 per cent notes which mature January 1. The Soo Line is authorized to issue \$12,106,000 of first and refunding mortgage bonds, Series B, in partial reimbursement for capital expenditures and the outlay necessary to acquire the aforementioned Wisconsin Central bonds. Of these bonds \$8,000,000 are to be sold at not less than 95 and the remainder held in the treasury.

NEW ORLEANS, NATALBANY & NATCHEZ.—Operating under Lease.—The Interstate Commerce Commission has authorized this company to operate under lease a line owned by a lumber company extending from Grangeville, La., to Slaughter, 18 miles.

NEW YORK & LONG BRANCH.—Securities and Control.—The Interstate Commerce Commission has authorized this company to issue \$2,000,000 of capital stock and \$538,000 of series A consolidated mortgage bonds, these securities to be sold at par and the proceeds used to pay advances made by the Pennsylvania and the Central of New Jersey. The Pennsylvania is authorized to purchase the stock issue, which will give it equal and joint control, with the Central of New Jersey, of the property.

NEW YORK CENTRAL.—Equipment Trust.—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$5,895,000 of its second equipment trust of 1929 certificates, bearing interest at $4\frac{1}{2}$ per cent, to be sold at the highest bid, 97.02, to the joint bidders, the Chase Securities Corporation and Freeman & Co. At this price the average annual cost to the railroad will be approximately 4.978 per cent. The issue will mature in installments between 1930 and 1944.

PENNSYLVANIA.—Stock.—The Interstate Commerce Commission has authorized this company to issue \$71,836,050 of capital stock of a par value of \$50 a share to be offered to stockholders of record December 7 at par.

PITTSBURGH & WEST VIRGINIA.—Notes.—This company has applied to the Interstate Commerce Commission for authority to borrow \$2,000,000 for use in financing its Connellsville extension by issuing unsecured $5\frac{1}{2}$ per cent notes for four months.

RIO GRANDE SOUTHERN.—Receiver Appointed.—Judge Foster J. Symes of the federal court at Denver, Colo., has appointed Victor A. Miller, an attorney of that city, as receiver. The appointment of a receiver was made at the instance of bondholders following the temporary suspension of service between Vance Junction, Colo., and Rico, 29 miles, because of damage to the right of way resulting from a slide at Ames, Colo.

SOUTHERN PACIFIC.—Bonds.—The Interstate Commerce Commission has authorized the Southern Pacific Railroad to procure the authentication and delivery of \$1,074,000 of first and refunding mortgage bonds in reimbursement for retirement of an underlying issue, the Southern Pacific Company to assume a guarantor's obligation with respect to these bonds.

WABASH.—Control of Lafayette Union.—The Interstate Commerce Commission has authorized this company to acquire control by lease of the Lafayette Union, the new lease to date thirty years from July 1, 1929.

WABASH.—Valuation.—This company has filed with the Interstate Commerce Commission a petition for a reopening of its valuation proceeding for additional testimony regarding its investment account. The petition states that since the hearing it has made an extensive study over a period of months which shows

that its approximate investment in property used in accordance with the commission's classification on valuation date was \$161,545,948, of which \$100,060,245 represented additions and betterments and other charges properly chargeable to investment account subsequent to 1871 for which details can be furnished. The balance represents the investment account of predecessor companies.

WESTERN MARYLAND.—Acquisition.—The Interstate Commerce Commission has authorized the Greenbrier, Cheat & Elk to acquire a line from Bergoo, W. Va., to Webster Springs, 12 miles, a line from Webster Springs extending down the Elk river for 2 miles and another line extending 4 miles from Webster Springs—most of which mileage is narrow-gage. The lines are to be paid for by the issue of \$650,000 of West Virginia Midland Extension first mortgage 5 per cent bonds, to be delivered to the West Virginia Midland in payment. The Western Maryland is authorized to acquire by lease the lines the Greenbrier is acquiring, and to assume obligation and liability in respect of the bonds which the Greenbrier will issue.

WINCHESTER & WARDENSVILLE.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the line formerly owned by the Winchester & Western from Winchester, Va., to Wardenstown, W. Va., 38 miles, and to issue \$134,000 of stock, \$330,000 of first mortgage bonds, and 332,000 of income bonds.

Average Prices of Stocks and of Bonds

	Dec. 17	Last week	Last year
Average price of 20 representative railway stocks.	131.27	133.33	125.49
Average price of 20 representative railway bonds.	93.05	93.10	93.20

Dividends Declared

Albany & Susquehanna.— $4\frac{1}{4}$ per cent, payable January 2 to holders of record December 14.
 Canada Southern.— $1\frac{1}{2}$ per cent, semi-annually, payable February 1 to holders of record December 27.
 Chicago, Burlington & Quincy.—5 per cent, payable December 26 to holders of record December 17.
 Chicago, Indianapolis & Louisville.—Common, $2\frac{1}{2}$ per cent; Common Extra, 1 per cent; Preferred, 2 per cent, all payable January 10 to holders of record December 26.
 Cincinnati Northern.—\$5.00, payable January 20 to holders of record January 13.
 Cleveland, Cincinnati, Chicago & St. Louis.—Common, 2 per cent, quarterly; Preferred, $1\frac{1}{4}$ per cent, quarterly; both payable January 20 to holders of record December 27.
 Colorado & Southern.—Common, 3 per cent, annually; First Preferred, 2 per cent; Second Preferred, 4 per cent, all payable December 31 to holders of record December 20.
 Hudson & Manhattan.—Preferred, $2\frac{1}{2}$ per cent, payable February 15 to holders of record February 1.
 Mahoning Coal R. R.—Common, \$12.50, quarterly, payable February 1 to holders of record January 15; Preferred, \$1.25, payable January 2 to holders of record December 23.
 Michigan Central.—\$20, semi-annually, payable January 29 to holders of record December 27.
 Mobile & Ohio.— $3\frac{1}{2}$ per cent; Extra, 5 per cent, both payable December 30 to holders of record December 23.
 New York Central.—2 per cent, quarterly, payable February 1 to holders of record December 28 to January 22.
 Norfolk Southern.—Dividend passed.
 Northern Pacific.— $1\frac{1}{4}$ per cent, quarterly, payable February 1 to holders of record December 31.
 Southern.—Common, 2 per cent, quarterly, payable February 1 to holders of record January 2; Preferred, $1\frac{1}{4}$ per cent, quarterly, payable January 15 to holders of record December 26.

Railway Officers

Executive

F. W. Paine, treasurer of the Copper Range, with headquarters at Boston, Mass., has also been elected president, succeeding **William A. Paine**, deceased.

George E. Fuller has been appointed executive general agent of the Alabama, Tennessee & Northern, with headquarters at Mobile, Ala.

Frank R. Pechin, vice-president in charge of operation of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has retired from active service effective January 1. A sketch covering Mr. Pechin's 48 years of service with the Chicago & North Western system and a reproduction of his photograph appeared in *Railway Age* of July 13, page 182, at the time of his election as vice-president of the Omaha.

Carl R. Gray, Jr., general manager of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been elected vice-president and general manager, effective January 1. A sketch of Mr. Gray's career together with a reproduction of his photograph appeared in the *Railway Age* of July 20, page 28, at the time of his appointment as general manager of the Omaha.

John R. Turney, of the law firm of Carter, Jones & Turney, St. Louis, Mo., general solicitors of the St. Louis Southwestern has been elected vice-president in charge of traffic and law of the Cotton Belt lines, with headquarters at St. Louis and Tyler, Tex. **J. D. Watson** general traffic manager, has been appointed assistant to the president, with headquarters as before at St. Louis. Mr. Watson will act as the personal representative of the president in Missouri, Arkansas and Louisiana. **John F. Lehane**, vice-president in charge of traffic of the Texas lines, with headquarters at Tyler, will now act as the personal representative of the president in Texas, with headquarters at Fort Worth, Tex.

John Duffy, who was recently elected vice-president in charge of traffic of the Lehigh Valley, with headquarters at New York, was born in Memphis, Tenn. He entered the service of the Lehigh Valley in July, 1913, with the advertising department. He was later appointed assistant secretary and during federal control of the railways he was assistant federal manager. He was appointed assistant to the president in December, 1929, serving in that capacity until his recent promotion to the position of vice-president of the company. While acting as assistant to the president, Mr. Duffy was in charge of solicitation and

service in the traffic department. Prior to entering the railroad field he was engaged in newspaper work in Memphis, Chicago and New York.

Financial, Legal and Accounting

Frederic T. Harward has been appointed general attorney of the Grand Trunk Western, with headquarters at Detroit, Mich., succeeding **H. R. Martin**, who has resigned.

G. H. Penland, district attorney for the Missouri-Kansas-Texas at Waco, Tex., has been promoted to assistant general solicitor of the Texas lines, with headquarters at Dallas, Tex., succeeding **A. E. McKnight**, deceased.

J. P. Blair, general counsel of the Southern Pacific, with headquarters at New York, will retire from active service under the pension rules of the company on December 31, after nearly 38 years' continuous service in the law department of the Southern Pacific Lines. **Ben C. Dey**, general attorney, Lines in Oregon has been appointed general counsel, effective January 1, with general supervision and control of all legal business of the company and its subsidiary corporations, with headquarters at New York.

E. W. Kayser has been appointed treasurer of the Kansas City, Mexico & Orient, with headquarters at El Paso, Tex. **E. D. Reynolds** has been appointed assistant treasurer, with headquarters at El Paso. **Sherwood Johnston** has been appointed secretary, with headquarters at Los Mochis, Sin. **O. W. Borrett**, comptroller of the Mexico North Western, with headquarters at El Paso, Tex., has also been appointed comptroller and assistant secretary of the Orient. **C. H. Bavin** has been appointed auditor, with headquarters at Los Mochis. **P. D. Aliaga**, local auditor of the Orient at Chihuahua, Chih., has been promoted to assistant auditor, with headquarters at Ciudad Juarez, Chih. **G. N. Martinez**, auditor of the Mexican Pacific at Los Mochis, has also been appointed assistant auditor of the Orient. **Jorge Vera Estanol** of Mexico, D. F., **Charles Hudson** of Chicago and **Delbert J. Hoff** of Kansas City, Mo., formerly general counsel for the receiver and vice-president of the corporate company, have been appointed counsel.

Operating

J. Kennedy, master mechanic of the McCloud River, has been appointed superintendent, with headquarters as before at McCloud, Cal.

J. W. McColgan has been appointed superintendent of personnel of the St. Louis Southwestern Lines, with head-

quarters at Tyler, Tex. **L. E. Hoffman** has been appointed inspector of operation, with headquarters at Pine Bluff, Ark., and the offices of the superintendent of safety and train rules examiner have been abolished.

C. A. Hughes has been appointed trainmaster of the Wichita division of the Missouri Pacific, with headquarters at Wichita, Kan. **William A. Anderson**, trainmaster of the Arkansas division, with headquarters at Little Rock, Ark., retired from active duty on December 1, after 26 years of service with the Missouri Pacific.

R. S. Foulk, yardmaster on the Pennsylvania, has been promoted to assistant trainmaster of the Buffalo division, succeeding **C. R. Colgrove**, deceased. **H. L. McClain**, general yardmaster, has been promoted to assistant trainmaster of the Allegheny division, replacing **J. A. Markle**, who has retired from active service. **P. B. McNerney**, yardmaster on the Buffalo division, has been promoted to assistant trainmaster of the Wheeling division, succeeding **D. A. Callahan**, who has been transferred to the Eastern division at Canton, Ohio. Mr. Callahan replaces **J. W. Fife**, who has been transferred to the Pittsburgh division at Pitcairn, Pa., to succeed **J. A. Gross**, who has been appointed shop yardmaster.

William A. Williams, who has been appointed superintendent of dining car and restaurant service of the Delaware, Lackawanna & Western, with headquarters at Hoboken, N. J., was born on January 20, 1879, at Newport, Mon., England. He was educated in the public high schools, business school and art school and entered railway service in 1907, as steward for the Canadian Pacific. In 1911 he entered the service of the



William A. Williams

Grand Trunk in the same capacity and in 1912 he became associated with the Pennsylvania, serving successively from 1912 to 1922 as dining car steward and from 1922 to 1923 as inspector of service, Lines West. In 1923, Mr. Williams was appointed commissary agent, Lines West, with headquarters at Columbus,

Ohio. With the inauguration of the training school for dining car employees with its experimental kitchens and schools in Columbus, Ohio, Mr. Williams was appointed supervising instructor at that point. When a similar training school was inaugurated in Chicago, he was also appointed supervising instructor in that city, with the management of both schools. He served in this capacity until his recent appointment as superintendent of dining car and restaurant service for the Delaware, Lackawanna & Western.

James M. Baths, who has been appointed general superintendent of the Chicago Great Western, with headquarters at Oelwein, Iowa, obtained his first railway experience with that road as a call boy. He was born at Chicago on June 18, 1881, and following his first railroad work in 1895 as a call boy on the Great Western he served successively as a messenger, clerk, brakeman and switchman. In September, 1903, he entered the service of the Chicago & Alton as a switchman, later being pro-



James M. Baths

moted to general yardmaster and then to trainmaster. From June, 1911, to June, 1912, Mr. Baths was an assistant superintendent on the Denver & Rio Grande and then became a trainmaster on the Chicago, Indianapolis & Louisville at Lafayette, Ind. Later he was promoted to superintendent on the Monon at the same point where he remained until January, 1915, when he was appointed assistant superintendent on the Great Western at Red Wing, Minn. In April, 1917, he was appointed superintendent of the Peoria & Pekin Union, with headquarters at Peoria, Ill., a position he held until his appointment as general superintendent of the Great Western.

Traffic

Charles H. Rombach, chief clerk in the freight traffic department of the St. Louis-San Francisco, has been promoted to assistant general freight agent at St. Louis Mo.

H. N. Roberts has been appointed assistant general freight agent of the St. Louis Southwestern at Tyler, Tex., succeeding **D. S. Brown**, deceased.

Walter F. Emde has been appointed district freight agent of the Baltimore & Ohio, with headquarters at New York, succeeding **H. C. Couse**, promoted.

O. B. Du Rand has been appointed general agent of the freight department of the Canadian National at Detroit, Mich., succeeding **L. E. Ayer**, who has been transferred to Philadelphia, Pa.

B. W. La Tourette has resigned as assistant general freight and passenger agent of the Missouri-Illinois at St. Louis, Mo., to engage in general practice of law in that city.

D. S. Lambeth, commercial agent on the Louisiana & Arkansas at Hope, Ark., has been promoted to general agent at Alexandria, La., succeeding **A. B. Patten**, who has been transferred to Hope.

C. A. Schultz, commercial freight agent of the Baltimore & Ohio, with headquarters in New York City, has been appointed district freight representative, with headquarters at Newark, N. J., succeeding **Charles S. Stout**, promoted. **G. J. Redden** will succeed Mr. Schultz as commercial freight agent at New York.

F. J. Clark, general freight and passenger agent of the Mexico North Western, with headquarters at Andad Juarez, Chih., has also been appointed traffic manager of the Kansas City, Mexico & Orient. **W. P. Briggs**, general manager of the Mexican Pacific, with headquarters at Los Mochis, Sin., has also been appointed assistant traffic manager of the Orient.

The titles of a number of commercial agents of the Delaware, Lackawanna & Western, **Walter R. Kneiss** at San Francisco, Cal., **Charles E. Hall**, at Seattle, Wash., **A. L. Bahler** at St. Louis, Mo., **O. H. Warmbold** at Detroit, Mich., and **M. J. Naughton** at Cleveland, Ohio, have been changed to general agents. The titles of **Lee H. Savage**, representative at Portland, Ore., and **Harry E. Allen**, representative at Los Angeles, Cal., have been changed to commercial agents.

Archer W. Miller, who has been appointed general eastern passenger agent of the Baltimore & Ohio, with headquarters at New York, was born in Pittsburgh, Pa., on July 17, 1894. He was educated in the public and high schools of Pittsburgh and the University of Pittsburgh. He first entered railway service in May, 1924, with the Baltimore & Ohio at Chicago. He was transferred to Pittsburgh as passenger representative in May, 1925, and in January, 1929, he was appointed division passenger agent at Toledo, Ohio, the position he held at the time of his re-

cent appointment as general eastern passenger agent.

W. H. Kelly, general agent of the traffic department of the New York, Chicago & St. Louis at Minneapolis, Minn., has been promoted to assistant general passenger agent, with headquarters at Chicago, succeeding **C. A. Asterlin**, who resigned on December 1. **W. B. Robbins**, general agent at Lansing, Mich., has been transferred to Minneapolis, to succeed Mr. Kelly. The position of live stock agent at Chicago formerly held by **W. E. Craddock** has been abolished and the duties of that position have been transferred to the jurisdiction of **F. S. Olds**, general live stock agent at Cleveland, Ohio.

R. P. Harrington, assistant freight traffic manager of the St. Louis Southwestern, has been promoted to traffic manager in charge of solicitation. **W. F. Knobeloch**, assistant freight traffic manager, has been promoted to traffic manager in charge of rates. **A. J. Lehmann**, assistant freight traffic manager, has been promoted to traffic manager in charge of divisions. **W. F. Murray**, freight traffic manager of the Texas lines, has been appointed traffic manager in charge of relations with public, civic and commercial organizations on the system. Each of these officers will have headquarters at St. Louis, Mo., and Tyler, Tex. The headquarters of Messrs. Harrington, Knobeloch and Lehmann were formerly at St. Louis, while Mr. Murray's headquarters were at Tyler.

Alfred E. Rosevear, general freight agent of the Canadian National with headquarters at Winnipeg, Man., who retired from active duty on December 15 after 52 years of continuous service with that railway and its predecessors, was born on February 20, 1863, at Montreal, Que. After attending the Montreal Academy, Mr. Rosevear entered railway service in 1878 as a clerk in the motive power department of the Grand Trunk at Montreal. Two years later he was transferred to the traffic department and from 1880 he also served successively as a clerk in the office of the general superintendent and a stenographer in the office of the general manager. For the following eight years he was employed in the freight traffic department at Detroit, Mich., and Chicago, and for the next ten years he acted as freight claim agent of the Grand Trunk system. In April, 1908, Mr. Rosevear was appointed assistant general freight agent, with headquarters at Montreal, and in November, 1912, he was appointed assistant to the vice-president. In the following year he was promoted to general freight agent of the Grand Trunk and the Grand Trunk Pacific Coast Steamship Company, with headquarters at Winnipeg. When the Canadian National was formed, Mr. Rosevear was appointed general freight agent at Winnipeg.

Engineering, Maintenance of Way and Signaling

Frank H. Olmstead has been appointed chief hydrographic engineer of the Kansas City, Mexico & Orient, with headquarters at Los Angeles, Cal.

M. M. Churchill, acting division engineer of the Kamloops division of the British Columbia district of the Canadian National, with headquarters at Kamloops, B. C., has been promoted to division engineer of that division.

H. R. Davis, supervisor on the Illinois Central at Harrison, Miss., has been promoted to division engineer at Greenville, Miss., succeeding **J. M. Harper**, who has been transferred to Baton Rouge, La., where he replaces **E. W. Brown**, deceased.

E. H. Thornberry, who has been promoted to chief engineer of the Peoria & Pekin Union, with headquarters at Peoria, Ill., has been connected with that company for the past 16 years. He was born on September 30, 1888, at Mattoon, Ill., and after attending the public schools of that city received his technical training at the University of Illinois. He entered railway service in 1905 as a chainman on the Cairo division of the Cleveland, Cincinnati, Chicago & St. Louis at Mt. Carmel, Ill. Mr. Thornberry spent the next four years in the construction department of the Big Four as a rodman, instrumentman and resident engineer and as assistant engineer in the maintenance of way department at Mattoon. In 1909 he became an assistant engineer in the maintenance of way department of the



E. H. Thornberry

Union Pacific on the Wyoming division at Cheyenne, Wyo., where he remained until 1912 when he was transferred to the Nebraska division. He was also engaged for a time in special work for the division engineer at Omaha, Neb., then becoming an assistant engineer in the maintenance of way department of the Southern Pacific on the San Joaquin division at Bakersfield, Cal. Mr. Thornberry was appointed assistant chief en-

gineer of the Peoria & Pekin Union, with headquarters at Peoria, Ill., in 1913, his further promotion to chief engineer becoming effective on October 11.

A. Chinn, who has been appointed chief engineer of the Chicago & Alton, with headquarters at Chicago, has been engaged in railway engineering for 11 years. He was born at Dallas, Tex., on September 26, 1894, and graduated from Virginia Polytechnic Institute in 1916. Mr. Chinn entered railway service in the latter year as an instrument-



A. Chinn

man on the Chicago, Burlington & Quincy on track elevation at Aurora, Ill. During 1918 and 1919 he served as a second lieutenant of field artillery in the American Expeditionary Force in France and then returned to the Burlington, where he was engaged from 1919 to 1921 as an instrumentman on yard construction at La Crosse, Wis., and Centralia, Ill. In 1922, he was promoted to assistant engineer at Aurora, where he remained until 1923 when he became division engineer and roadmaster on the Quincy, Omaha & Kansas City, at Kansas City, Mo. Mr. Chinn was transferred to the Burlington as roadmaster at Kansas City in 1925 and in the following year he was promoted to assistant engineer maintenance of way at Alliance, Neb. Early in 1927 he was promoted to district engineer maintenance of the Wyoming district, with headquarters at the same point, and later in the year he was transferred to Lincoln, Neb., and also placed in charge of work equipment, a position he held until his appointment as chief engineer of the Alton on December 1.

Mechanical

Guy H. Pratt has been appointed general air brake inspector of the Oregon-Washington Railroad & Navigation Company, with headquarters at Portland, Ore., succeeding **J. C. Shea**, deceased.

N. Bell, master mechanic of the Iowa division of the Illinois Central with

headquarters at Waterloo, Iowa, has been promoted to general master mechanic of the Iowa, Minnesota and Wisconsin divisions, with headquarters at the same point. **H. L. Needham**, master mechanic of the Chicago Terminal, has been promoted to general master mechanic of the Chicago Terminal, Illinois, Springfield and Indiana divisions, with headquarters as before at Sixty-third street, Chicago. The jurisdiction of **W. F. Lauer**, master mechanic at Memphis Tenn., has been extended to include the Mississippi division. **R. R. Royal**, general foreman of the locomotive department at Paducah, Ky., has been promoted to master mechanic of the Paducah shop, with headquarters at the same point.

Purchases and Stores

E. R. Morganroth has been appointed purchasing agent of the Pacific Coast Railroad and the Pacific Coast Railway, with headquarters at Seattle, Wash., succeeding **W. E. Nichols**, who has retired.

Obituary

A. E. McKnight, assistant general solicitor of the Texas lines of the Missouri-Kansas-Texas, with headquarters at Dallas, Tex., died in that city on November 30.

John W. Melone, who retired from active duty as assistant general freight agent of the Western lines of the Baltimore & Ohio at Chicago on May 1, died in that city on October 25. Mr. Melone had been in the service of that road for nearly 45 years.

James Isaac McKinney, who retired as superintendent of the Montgomery and Mobile division of the Louisville & Nashville on July 1, 1921, after 48 years in the service of that railroad, died from a heart attack at his home at Montgomery, Ala., on December 12. Mr. McKinney, who was 77 years of age at the time of his death, had been a division superintendent on the Louisville & Nashville for 32 years.

W. E. Renneker, assistant general freight agent of the Atlantic Coast Line, with headquarters at Rocky Mount, N. C., died at the South Rocky Mount hospital on December 14. Mr. Renneker had been in the service of the Atlantic Coast Line for nearly 43 years.

E. W. Brown, division engineer on the Illinois Central at Baton Rouge, La., died at New Orleans, La., on November 21.

William M. Whitenton, former vice-president of the Missouri-Kansas-Texas, who died at Dallas, Tex., on December 10, had been in railway service for 45 years. He was born at Victoria, Tex.,

in 1869 and after attending high school entered railway service at the age of 15 years as a section laborer on the Katy. Later he served on that road as a telegraph operator, a station agent and a train dispatcher, and in 1890 he became a train dispatcher on the Texas & Pacific. After being advanced to chief dispatcher on the latter road, Mr. Whitenton entered the service of the Chicago, Rock Island & Pacific as a train dispatcher in 1898. With that company he then advanced through the positions of trainmaster on the Choctaw, Oklahoma & Gulf at Geary, Okla., superintendent at Little Rock, Ark., and Trenton, Mo., general superintendent of the Choctaw district at Little Rock and general manager of the Southern or Third district at Fort Worth, Tex., and of the First district at Des Moines, Iowa. During 1913 he served as assistant chief operating officer of the Katy with headquarters at Dallas, and during 1914 and a part of 1915 he acted as an operating expert on the Chicago Association of Commerce committee of in-



W. M. Whitenton

vestigation on smoke abatement and the electrification of railroad terminals. Mr. Whitenton then became an operating assistant on the staff of the vice-president of the Texas & Pacific, where he remained until January 1, 1917, when he was appointed trainmaster of the Katy at Muskogee, Okla. Later he was promoted to superintendent at the same point and to general superintendent at Parsons, Kan. On March 1, 1920, he was further promoted to assistant chief operating officer, with headquarters at Dallas, where he remained until 1923 when he was elected vice-president in charge of operation, with headquarters at St. Louis, Mo. On February 1, 1927, he resigned as vice-president, with headquarters at Dallas, and shortly thereafter he became president of the Railroad Building and Loan Association of Dallas. From January 1, 1928, to October 1, 1929, Mr. Whitenton served as assistant vice-president in charge of transportation and maintenance of way of the Midland Valley and the Kansas, Oklahoma & Gulf at Muskogee.